THE FARMERS' REGISTER.

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EDMUND RUFFIN, EDITOR AND PROPRIETOR.

LIMING LAND WITHOUT ANY BENEFICIAL RESULT.

To the Editor of the Farmers' Register.

Nottoway, June 16th, 1841.

Though not a subscriber to your paper, yet I am not indifferent to its success, nor deprived of the pleasure and profit too, I trust, to be derived from its perusal. On the contrary, you have my most hearty congratulations for the many compliments you have won from your correspondents, for the ability and usefulness with which you have conducted it; and I am now restrained more by prudence than justice, from expressing, *plenis verbis*, the favorable regard in which your labors are held by an humble member of the agricultural community. This will be better done, no doubt, to your own taste, and with less fulsomeness to your readers, by adding, if I can, to the number of facts, which you may be able to present before them, worthy of their attention.

In the winter of 1837–'38, I cut down a piece of pine land, of second growth, in good heart, being interspersed with dog-wood and grape vine. The size of it was 3 or 4 acres of ground. It was permitted to lie for 1 year with the fallen trees and rubbish upon it. In the spring of 1839, it was hilled and planted in tobacco, followed by the same crop in 1840, and by wheat and herds-grass the last winter. Previously to hilling for the first crop of tobacco, a portion of *lime*, made by burning oyster shells, was sprinkled over half an acre of this land, selected from about the middle of it, the pine beard being permitted to remain upon it, but removing by a slight raking the coarsest of the trash. It was put on at the rate of about 70 bushels of lime to the acre. I have carefully watched the effects of it upon the 3 successive crops, by comparing the products, according to the eye, of the limed and adjoining portions of land, and have not yet been able to detect the least decided advantage of the former over the latter, more than what might be attributed in certain parts to superior original fertility of soil. The crop of wheat now upon it shows such a uniformity of aspect, in growth and maturity, throughout the entire piece, that it seems to me the most minute observer would not dream that such a vaunted fertilizer as lime is had been applied to any part of it, if we may except many irregular spots over the entire surface, including limed and unlimed portions, in which the more vigorous growth and more rapid maturity of the wheat manifest the undoubted virtues of *ashes*, deposited by the burning of heaps of logs and brush.

Other experiments with lime have been made and are making in my neighborhood, but with few well-established practical conclusions, at least, in its favor. A gentleman sowed lime upon his tobacco lot last spring after manuring it, and did not reap such a crop of tobacco as his manure alone promised. Not meaning, however, to aver that the lime was an injury, but only that it did not seem, to an appreciable extent, to counteract injurious causes. This gentleman is doubtless flattered with the hope, if not belief, that its beneficial effects will be considerably realized in the present crop of wheat. Whether it be confirmed or not, it will be difficult accurately to ascertain, but the conclusion to be drawn from the experiment, related above, upon my own land, would seem to be unfavorable to such a supposition.

Guided by principles which I suppose you to have advanced in relation to the action of calcareous manures, I shall yearly watch the effects of the lime upon the ½ acre of ground above described, with the expectation, if they are correct, that with moderate cultivation and grazing, and a moderate supply of vegetable matter of its own growth, from herds-grass, it will either improve more rapidly than the adjoining land, or deteriorate more slowly. If the above should merit any notice from you or your readers, it would be pleasing to me to see something confirmatory of, or contradictory to what is here advanced; for, in agricultural practice and opinion, the paradox is just, that our enemies are often our best friends.

G. F.

FRENCH AND AMERICAN RURAL COMFORTS.

From the Farmers' Cabinet.

Mr. Editor:—To be able to "define our proper position in the world," and to form a true estimate of our character and standing in the scale of human beings, it will be necessary for us to compare ourselves by the standard of comfort and happiness enjoyed in other civilized countries, and especially with the inhabitants of those states which have been for ages under other forms of government, become venerable from their antiquity. I am led at present to this subject, by a perusal of the article in the Cabinet for March, on the state of society in that part of the continent which is denominated "the Granary of Europe," where cheap land and low wages seem almost synonymous with misery and starvation.

During a late tour in the low countries in France, I was struck *dumb* while witnessing the state of society in that part of "dear, delightful France," having never before had the most distant idea of the possibility that such a low, debased, and degraded state of things could exist in any civilized country under heaven; and I have never, since my return, been able to find words to express my feelings, or to describe what I there saw; but as I have since found the same scenes portrayed to the life in Blackwood's Magazine, all I have to do is to bear testimony to the truth of the picture, which is by no means too highly colored, and which I do most conscientiously; congratulating my fellow countrymen on the comfort and happiness which they enjoy in this blessed land of liberty and high wages. The traveller thus commences:—

"Nantes, in Bretagne. Passed through a productive country, where the cows seemed the legitimate proprietors—the peasantry, interlopers. The fields were luxuriant, but all that betokened

the presence of man was deplorable. 'God made the country and man made the town,' is the poet's manner of accounting for narrow streets, but the general order of French towns do not come within the catalogue of *human buildings*—nothing on earth comes nearer to the troglodyte style. Nine-tenths of them seem to have been the simple work of nature; piles of mire, shaped into habitations by the hand of time and tempest, and as guiltless of glass windows, whitewash, and comfort of any conceivable kind, as a cavern in the back of an American wilderness! But the Frenchman is a genuine 'Gallio' in private life, and careth for none of these things; yet he is within 50 miles of a people whose study is every thing of domestic convenience. To what can the extraordinary difference be attributed, which makes the man of England and the man of France as essentially antipodean as if the diameter of the earth divided them? It cannot be climate, for in three-fourths of France they have shower for shower with England; or if there be a distinction, the winter is keener and the summer more torrid, thus both requiring more diligence in repelling the effects of season. It cannot be poverty, for the French peasant has generally become a proprietor: it cannot be government, for if governments act at all in the matter, it is to set the example of building: yet the French peasant goes on from year to year and from age to age, sitting in a cottage as naked of comfort as if he sat on a hill in Siberia, and a Tartar hut would be well equipped to the best of these hovels: they have not even the merit of being whitewashed sepulchres, for a brush has never touched them since the moment they arose from their original mire;—the truth is, that "home," as it has been a thousand times observed, is not *French;* there is but little gathering around the family hearth, and the cottage is not the place of their mirth; they return to it to sleep, and go to it as men to the churchyard, because they cannot help it. Their festivities are for the guingette, their superfluous coin is expended on the gilded head-gear of the rustic belles, or the flame-colored waistcoats and flowered stockings of the rustic beaux; while the summer lasts they live in the open air, working, dancing, eating, and flirting through the day; and when the winter comes, they cluster together in their huts like bees, with no more concern for their furnishing than a generation of rabbits in their warren; there they hibernate, dismal, dark, and frozen, until the first gleam of sunshine rouses them, and lets the whole tribe loose like the swallows—and then all is fluttering, frisking and hunting flies—or matters full as light as flies—again." J. C.

EXTIRPATION OF SASSAFRAS SPROUTS.

From the Kentucky Farmer.

Pleasant Run, Logan Co., May 22, 1841.

You ask, in the 29th number of the present volume, for the practice of some one in subduing sassafras sprouts; I have thought proper to give you and your correspondent, Mr. Champion, of Caldwell, my observations and practice. When I commenced farming in this county I was annoyed with the sassafras, and remarked to a neighbor of mine that the sassafras sprout was a very great objection to the Green River country. I saw fields thickly set with it and the fences completely staked and ridered with them growing, and knew not how to get rid of this evil; to cut one down, was to insure twenty more. He informed me that a few years previous he would have given one hundred dollars to have them cleared from one field, but had succeeded entirely in freeing them from his farm. His practice had been to sow his fields in clover, and pasture his sheep on them, commencing early in May. This stock will keep the leaves well trimmed off, which will cause them to die, root and branch. I had a field at that time better set than most of the wheat this spring. It was set in clover; I put all my stock on it, and still lacked some, and borrowed from my neighbors, which entirely subdued it. I advise all of my brother farmers whose fields are infested with this troublesome shrub to sow them in clover, and instead of having their stock running in the wood, until July and August, with their winter coats on, to put them on the clover in May; and if they have not a sufficient number themselves to keep the sprouts trimmed, to borrow of their neighbors, and not think of a charge for pasturage, for the laborer is worthy of his hire. If you think the above or part of it worthy the consideration of your correspondent, you are at liberty to give it him in any form you please. WINN GUNN.

STATE AID TO AGRICULTURE IN NEW-YORK.

From the Cultivator.

We are gratified to announce that the bill introduced for the aid and improvement of agriculture, into the legislature of this state, has become a law, and that, if not all that some of our agricultural friends expected, still its influence must be powerful for good. It appropriates eight thousand dollars annually, of which $700 goes to the N. Y. State Ag. Society, and the remainder is divided among the several counties in proportion to their population, on conditions and restrictions which must ensure its faithful application to the use intended by the state when granting the aid. It will be seen that no county can receive its share of the money unless a county society is organized, and a sum equal to that appropriated is raised by the association to be added to and expended with that for premiums. This is a very important provision; and one on which we think the great efficiency and utility of the aid afforded will depend. Every county in the state, therefore, which has not already an efficient society organized, should make no delay in effecting this object. Men of spirit, talent, enterprise, thorough farmers, or who feel a deep interest in the advancement of agriculture, must take the lead in this business, and the many will soon be interested in the result, and cheerfully follow the movement that we think will eventuate in so much good. Let every thing like sectional or political feeling be religiously eschewed in the management of these societies. They are intended for the people, to benefit the many, and so the funds appropriated must be sacredly regarded.

We think it may reasonably be anticipated that

the reports which are to be made to the secretary of state from the state society, and the county societies, will form an annual volume of the most instructive and useful kind, and which will form a record or history of agriculture in this state invaluable to the farmer. The agricultural law of 1817, has done much for the fame of De Witt Clinton, and the good effects resulting from it have not yet ceased to be felt. The farmers of the state have demanded, and the legislature have again granted aid to the agriculture of the state. Let such a use be made of this money, and such a spirit awakened in the community, that the agricultural prosperity of the state shall be commensurate with its unequaled position, and its immense resources.

An act for the encouragement of Agriculture.

[Passed May 5, 1841.]

The people of the state of New-York, represented in senate and assembly, do enact as follows:

§ 1. The sum of eight thousand dollars per annum shall be and hereby is appropriated for the term of five years, for the promotion of agriculture and household manufactures in this state, in the manner following, to wit: to the county of

Albany,	$205	Oneida,	$255
Alleghany,	123	Onondaga,	204
Broome,	67	Ontario,	130
Cattaraugus,	86	Orange,	152
Cayuga,	151	Orleans,	75
Chautauque,	143	Oswego,	131
Chemung,	62	Otsego,	148
Chenango,	122	Putnam,	38
Clinton,	84	Queen's,	91
Columbia,	133	Rensselaer,	180
Cortland,	75	Richmond,	34
Delaware,	106	Rockland,	36
Dutchess,	157	Saratoga,	121
Erie,	186	Schenectady,	51
Essex,	71	Schoharie,	97
Franklin,	50	Seneca,	74
Fulton & Hamilton,	60	Steuben,	138
Genesee,	179	St. Lawrence,	170
Greene,	91	Suffolk,	97
Herkimer,	112	Sullivan,	47
Jefferson,	183	Tioga,	61
King's,	143	Tompkins,	114
Lewis,	53	Ulster,	137
Livingston,	117	Warren,	40
Madison,	120	Washington,	123
Monroe,	194	Wayne,	126
Montgomery,	107	Westchester,	146
N. Y. to Am. Inst.	950	Yates,	61
Niagara,	93	N. Y. S. Ag. Soc.	700

§ 2. When the New-York State Agricultural Society and any county agricultural society now formed, or which may hereafter be formed in this state, or the American Institute in the city of New-York, shall raise by voluntary subscription any sum of money, the president and treasurer shall make and subscribe an affidavit of the facts of the formation of such society, and of their having raised a certain sum, specifying the amount thereof, which affidavit shall be filed with the comptroller of this state, who shall draw his warrant on the treasurer for a sum equal to the amount of such voluntary subscription, not however exceeding the amount to which such county or state society would be entitled, according to the apportionment aforesaid.

§ 3. The New-York State Agricultural Society and the several county agricultural societies now formed or which shall be formed in this state, during the continuance of this act, shall annually elect such and so many officers as they shall deem proper; and it shall be the duty of such officers annually to regulate and award premiums on such articles, productions and improvements, as they may deem best calculated to promote the agricultural and household manufacturing interests of this state, having especial reference to the net profits which accrue, or are likely to accrue, from the mode of raising the crop or stock, or the fabrication of the article thus offered, with the intention that the reward shall be given for the most economical or profitable mode of competition; provided always, that before any premium shall be delivered, the person claiming the same, or to whom the same may be awarded, shall deliver in writing to the president of the society as accurate a description of the process in preparing the soil, including the quantity and quality of the manure applied, and in raising the crop, or feeding the animal, as may be; and also of the expense and product of the crop, or of increase in value of the animal, with the view of showing accurately the profit of cultivating the crop, or feeding or fattening the animal.

§ 4. The president of the State Agricultural Society, and the several presidents of the said county societies, who shall receive or expend any of the moneys hereby appropriated, shall annually, in the month of December, transmit to the comptroller a detailed account of the expenditure of all the moneys which shall come into their hands under this act, and stating to whom and for what purpose paid, with the vouchers thereof; and the said presidents of the several county agricultural societies shall annually transmit in the month of December, to the Executive Committee of the New York State Agricultural Society, all such reports or returns as they are required to demand and receive from applicants for premiums, together with an abstract of their proceedings during the year.

§ 5. The Executive Committee of the New York State Agricultural Society shall examine all reports and returns made by the presidents of the county agricultural societies, and condense, arrange and report the same, together with a statement of their own proceedings, to the secretary of state, in the month of January in each year.

§ 6. The presidents of the several county societies, or delegates to be chosen by them annually for the purpose, shall be ex-officio members of the New York State Agricultural Society.

§ 7. It shall be the duty of the county clerks in the several counties of this state to cause notice to be given in one or more newspapers in each county, of the time and place of a meeting to be held in such county for the purpose of organizing such county agricultural society; and notice thereof shall be given at least four weeks previous to such meeting.

§ 8. This act shall take effect immediately.

State of New York, } This act having been ap-
Secretary's Office, } proved and signed by the Governor, on the 5th day of May, 1841, I do hereby certify that the same became a law on that day.

JOHN C. SPENCER, *Sec'y. of State.*

JAMES RIVER WATER-BORNE MARL, AND ITS EXPENSE. LIME AND CEMENT FROM STONE MARL.

At various places in our publications, and still more in private conversations, we have recommended and urged the use of water-borne marl to all those farmers on navigable waters who had not marl easily accessible on their own lands. Our arguments to this end, and estimates of advantages, have as yet had but very limited operation, not because they were not convincing to many, and who would gladly have incurred the proper expense, but because, to effect the object, required the co-operation of three different classes of operators. These were, 1st, the proprietor and worker of the marl beds, to sell, dig, and deliver the marl to lighters, or other vessels; 2d, watermen and owners of vessels to transport the marl; and 3d, purchasers upon fixed and large contracts, so as to furnish that regular and full employment which only could make all parts of the business (as of any other business,) both cheap in operation and profitable in results. Many persons were, and still are, anxious to buy marl—but few proprietors of the beds cared to work them on a proper mode for cheap delivery—and still worse was the chance to obtain the water transportation to be properly and certainly performed, and at other than exorbitant rates. But notwithstanding all the difficulties, we succeeded as early as 1833 in inducing Col. C. H. Minge, then residing in Charles City county, to commence marling his farm in that county from the bed which underlies Coggins Point, of which we gave to him (and also to others afterwards) the gratuitous use. Col. Minge proceeded on the proper mode for cheapness, by purchasing a vessel, and having the transportation carried on by his own hired hands. But though thus avoiding the exorbitant charges and unfaithful operations of lighter-men, he had to bear all the disadvantages and losses of carrying on all the separate branches of the business, generally out of reach of his supervision, and by the aid of ignorant and inexperienced hands—and, moreover, under other peculiar disadvantages, unnecessary to repeat here, but which may be seen, as slightly and generally referred to, in the report published at page 97 of 'Essay on Calcareous Manures.' Still, under all such disadvantages, (which we suppose must have served to increase the cost fully one-third,) Col. Minge continued his operations through two years, and, according to careful and particular estimates of all the items, he found the total expense of the uncovering and digging the marl, putting it on board, transporting it 15 miles on and across the broad part of James River, and landing it above high-water mark, to be, for 15,000 bushels (heaped) conveyed in 1833, not quite 2 cents the bushel, ($1\frac{14}{15}$ cents was the estimate,) and 17,000 bushels the next year, only $1\frac{6}{10}$ cents per bushel. This does not include any payment for the marl, as he was charged nothing for it. But if half a cent the bushel be allowed for that (which is enough,) his marl of the second year would still have cost him but little more than 2 cents when put out on his landing place.

But of the many who want to buy marl, and who would very gladly pay 3 cents, (and who in fact have paid 4 to 5 cents, or more,) none have been willing to undertake to be their own carriers. And while they have paid more than twice the amount of fair prices for lightering, the persons engaged in that business have made but little profit, owing to the ignorance, laziness, and worthlessness of most of the hireling hands who man the river lighters. Mr. Hill Carter (of Shirley) next to Col. Minge, was the earliest and has been the most extensive applier of water-borne marl on the borders of James River. But though he likewise obtained his early supplies gratuitously, (paying only for the labor performed,) he has never been able to have marl put on his shore at less than $4\frac{1}{4}$ cents; and yet, after seeing the effects of his early applications, he was so anxious to extend it to all his land, that he requested and authorized us to contract with any responsible person to furnish him marl enough, and regularly, at 5 cents the bushel. We were unable, at that time, to induce any proper person to undertake that large contract, and therefore it was not effected; though we were as well persuaded then as now, that even at 2 cents less, a good and sufficient profit would have been afforded to the other party. Under this opinion we rather discouraged the paying the high prices then asked, and advised several persons who would otherwise have bought, to wait for more moderate terms—or, still better, to become their own carriers. But to this time, the price has been very little reduced, (4 cents being the lowest yet paid, under the most favorable circumstances,) and large quantities of marl have been bought and used, at such high prices, though not one-twentieth of what might otherwise have been demanded, at fair prices.

During all this time, we refrained from offering to furnish marl from our beds, except by gift—and that for several reasons. In the first place, we did not choose that our urgent recommendations to others to purchase and use water-borne marl should, *even by possibility*, subject us to the suspicion of being impelled thereto by the desire

of making a pecuniary profit by the business—and therefore, we preferred that others should be undertakers of the business. Next, our own marl, on navigable water, though very rich, is peculiarly difficult to uncover and work, and therefore cannot be so cheaply furnished (to the bushel) as from many other more easily accessible beds. But, after leaving it to others for 8 years to commence this business, and carry it on, and with very little effect, either in reducing prices, or furnishing a regular and sufficient supply at any prices, we presume that *we* may now make the attempt to furnish a better and cheaper supply, without drawing suspicion on our motives in recommendations made, and opinions expressed, so long ago. According to the advertisement published on the cover of this number, it will be seen that the marl of Coggins Point is offered to be put on board lighters at 2 cents the heaped bushel; or at 1½ cents, if on contracts for 30,000 bushels or more. If purchasers will furnish their own lighters and hands, the transportation and landing of the marl (within 15 miles distance) may be performed for 1 cent more; and even to hired vessels, regularly employed, 1½ cents would furnish a sufficient profit—there being a proper wharf or stage at the landing place, and the marl being taken by the purchaser from the deck of the vessel. But no lighter-men will engage at this price for freight—and few can be relied on for regular work at even their own higher prices. Therefore, if this business is to be put on the cheapest and most profitable footing, (and which cannot be except as a large and regular business,) the purchasers of the marl must provide and man their own lighters. If that were done, and proper arrangements made, these terms for large contracts would permit the marl to be carried to distances within 15 miles, for 2½ to 3 cents the bushel, and 40 or 50 miles for 4 cents. But, to effect this unprecedented (and heretofore almost unhoped for) degree of cheapness, it will be essential that purchasers and land-owners shall operate on a large scale, and to the best advantage in economizing labor, as well as the workers of the beds, and shippers of the marl.

The lime-stone (as it may be truly termed, in regard to its calcareous constitution,) which is furnished by this same bed of marl, is another object of high importance, for cement; and if, as we presume, as rich stone-marl may be found in many other places in Virginia, we might not only be furnished at home with all the lime required for building, but at a much less price than is paid, to an immense amount annually, for the stone-lime of New England. Directed merely by our knowledge of its chemical constitution, we burnt this lime and used it for our own buildings, eight to ten years ago. Having since sold the farm, (Shellbanks, in Prince George county,) we had not seen the mortar used there, for six years, until a few days ago. The plastering, (of the dwelling house,) which was altogether of this lime, is unusually firm, and has stood better, as Mr. Theron Gee, the present proprietor thinks, than any plastering he has ever known made of other lime. A small part of the brick-work only, for experiment and comparison, was built with mortar made of this lime, in proportions of two measures of sand to one of lime. The mortar is of *remarkable* and very unusual hardness, and adhesiveness to the bricks, and very far harder, and far better in all respects, than the best oyster shell lime mortar, burnt at the same time, and used on the same day with the lime mortar, and by the same workmen, and in the same job. In fact, the marl-lime mortar is so greatly and strikingly superior, that no observer can doubt but that its value as a cement is increased by some or all the other ingredients which it contains besides the 85 to 90 per cent. of pure carbonate of lime. The remainder of its body is principally silex and clay—but is partly made up by small portions of iron, of gypsum, and of some other and more soluble salt. The cement is now much harder than the bricks which it unites, or than the stone from which it was burnt. And though we do not *know* the strength or value of any other bodies of marl than our own, and do not profess to warrant the fair selection of specimens from any other, (and which selection requires much more care and fidelity than are usually given to the object,) we doubt not but that there is much good material of this kind for mortar, in sundry other marl beds, which it would be greatly for the public benefit, as well as for private profit, to have brought into use.

We take this mode of again inviting the farmers on tide water who want marl, to take the proper course (by building and navigating lighters for themselves,) to make their supply cheap—and thereby to serve the public interests as well as their own, by extending the use of this greatest of agricultural improvers. At a small addition to the prices stated above, the marl could be put on board of sea coasting vessels, and almost as low, as they sometimes have to pay for ballast; so that in this manner it might be delivered in places even as remote as New York or Charleston, at 6 to 8 cents the bushel.

Those persons who may wish to be more particularly or fully informed of the practical effects and profits of the marl from Coggins Point, are referred to Hill Carter, esq., of Shirley, Col. Collier H. Minge, (now in Mobile,) and Dr. John Minge of Weyanoke. And besides various notices of our own, which of course we would not adduce as testimony in such a case, statements of some of the effects known by the gentlemen just named, may be seen at pages 186, 189, 247 and 511 of vol. 5, Farmers' Register.—Ed. Far. Reg.

PEAR TREES.

From the Genesee Farmer.

We find pear trees in less demand than almost any other article in the nursery. Why should this be so? The pear is one of our most delicious fruits: though from the scarcity of trees in the country, it is not improbable that many cultivators have never tasted the better kinds.

As an excuse for neglecting the pear tree, however, we have often heard it said, "they are so long before they begin to bear." Now this is the very reason why they should be planted without delay—why *no time should be lost.*

The remark, however, is only true *in part.* Some pear trees, indeed, like the Bergamot, require much time to get ready; but others, like the Julienne, appear to *come into bearing as soon as the apple tree;* and this trait of character is certainly of no less importance than the color or the size of the fruit, which pomologists are always so careful to mention. If the time required by each kind to come into bearing was generally known, purchasers of young trees could be much better accommodated. Delicious sorts would in all cases be wanted, but we could well afford to wait several years for the summer rose, the rousselette de Rheims, or the belle et bonne, to grow large and get ready, when Williams' bon Chretien, the summer frankreal, or the bloodgood, were bearing in the mean time. Of 81 sorts noticed by Manning in his "Book of Fruits," 17 are mentioned that "come early into bearing," though several belonging to this class, he has not marked; and at this time we have in the nursery, many trees of the Julienne, not more than six or seven feet high, in full flower. Grafts of this variety, of the Cushing, of the Johonnot, &c., set up on old stocks, bore in two years.

The pear is one of our hardiest fruit trees; and so far as our observations have extended, it is neither subject to the attacks of the caterpillar, nor the borer. Some perish, however, with the *fire-blight;* but it should not be allowed. The owner has as much right to complain of bad luck when he stands by while his cattle are destroying his *young* trees, as he has when he stands idle, without reaching forth a hand, while *scolytus pyri* destroys his *old* trees. Possibly, however, there are two kinds of fire-blight; but be this as it may, many of our trees have stood more than twenty years, without any losses of consequence, though the fire-blight has been several times amongst them—owing entirely, as we believe, to this circumstance: *we have cut off the dying limb, and burnt it without delay.* †

COMPOST DRESSING FOR MOWING GROUNDS.

From the Monthly Visiter.

In low lands, whether with or without rocks, with or without hard pan, as well upon flat elevations and side hills, as in drained swamps, the crop of hay may be increased to almost *any* extent by a process infinitely more simple, and less expensive, and much quicker, than by ploughing and hand-labor. The method of making compost-manure is the most simple that can be imagined; it is done with facility on the sides of roads, and in the cow and hog-pens, with the refuse of chip yards, leaves from the woods, peat and mud taken from the ditches, ashes, sand, earth taken from the back yards and sinks, scrapings from streets, with mixtures from almost every article that can be enumerated or imagined,—all will serve as manure for mowing lands, producing the most valuable and lasting effects as used for top-dressing only. These compost heaps should be well turned and intimately mixed before they are applied, when the spring or autumn season will be equally suitable for their operation, taking occasion to sprinkle over it a small quantity of herds-grass seed.

SUBSOIL PLOUGHING.

From the New England Farmer.

Letter of E. Phinney, esq. to A. Huntington, esq., published in the Transactions of the Essex Agricultural Society, 1840.

A. Huntington, esq.—Dear sir—The question is often asked, how can farming be made profitable? I answer, by liberal manuring, deep and thorough ploughing, and clean culture. I will venture to affirm, without fear of contradiction, that no instance can be cited, where a farmer who has manured his grounds highly, made a judicious use of the plough, and cultivated with care, has failed to receive an ample remuneration for the amount invested—nay more, that has not received a greater advance upon his outlay than the average profit derived from any other business. One great difficulty is, that most farmers seem not to be aware of the fact, that the greater the outlay, to a reasonable extent, when skilfully applied, the greater will be the profit; they therefore manure sparingly, plough shallow, and the consequence is, get poorly paid for their labor. This has raised a prejudice and given a disrelish to the business of farming, especially among those who are in the habit and are desirous of realizing something more from their occupation than a naked return of the amount expended.

The farmer who is so sparing of his manure that he can get but thirty bushels of corn from an acre, gets barely enough to pay him for the expense of cultivation; and in addition to this, by the ordinary method of ploughing, his field, at each successive rotation, is deteriorating, his crops becoming less, and in a few years he finds

he must abandon his exhausted and worn out fields, to seek a subsistence for himself and family in some other business, or in some other region, where the hand of man has been less wasteful of the bounties of nature.

Instead then of his scanty manuring of ten cart-loads to the acre, which will give him but thirty bushels of corn, let him apply thirty loads. This additional twenty loads, at the usual price of manure in this part of the country, will cost him thirty dollars. But he now, instead of thirty bushels of corn, gets sixty bushels, and the increased quantity of stover will more than pay for the excess of labor required in cultivating and harvesting the large crop over that of the small one. He has then added thirty bushels of corn to his crop by means of twenty loads of manure, which at the usual price of one dollar per bushel, pays him, in the first crop, for his extra outlay. His acre of land is laid to grass after taking off the corn, and the effect of his twenty loads of additional manuring will be to give him, at the lowest estimate, three additional tons of hay in the three first years of mowing it, worth fifteen dollars a ton standing in the field. Now look at the result. His thirty dollars expended for extra manuring was paid for in the first year's crop, and at the end of three years more he will have received forty-five dollars profit on his outlay of thirty dollars: and in addition to this, his land is improved, and in much better condition for a second rotation. There is no delusion in this. It is a practical result, of the reality of which any farmer may satisfy himself, who will take the trouble to try the experiment.

From no item of outlays can the farmer derive so ample and so certain a profit, as from his expenditures for manure to a certain extent. This has been most strikingly verified by some of our West Cambridge farmers. It is not uncommon among some of the farmers in that town, to put on their grounds one hundred dollars' worth of manure to the acre, and in more instances than one, the gross sales of produce from ten acres under the plough, have amounted to five thousand dollars in one season. This is the result of high manuring and judicious cultivation, of a soil too which is exceedingly poor and sandy."

The subject of subsoil ploughing is one upon which there has been little said, and less done, in this part of the country. In all our grounds, except those which are very loose and sandy, there is no doubt that great benefit would be derived from the use of the subsoil plough. In England, the effect of subsoil ploughing in increasing their crops, as stated by some agricultural writers, would seem almost incredible. By this means, the crops in that country have been doubled, and in many instances trebled. The expense, however, is stated to be very great—so great as to be beyond the means of most of our farmers. In one case the expense of subsoil ploughing on a farm of over five hundred acres, was estimated by the owner to cost the enormous sum of thirteen hundred pounds sterling. This calculation took into consideration the use of the heavy Deanston plough, which always required four, and in some stiff clays, six horses to work it. I am aware that an implement might be constructed, which though it might not do the business quite so well, could, nevertheless, be made highly beneficial in the hands of our farmers, and obtained at a far less cost. I am informed that Mr. Bosson, of the Yankee Farmer, has, with a highly praise-worthy zeal in the interest of agriculture, imported from England a subsoil plough, which may be worked with a less powerful team than the one commonly in use in that country.

In a climate like our own, which at that season of the year when our crops, particularly our root crops, most need the benefit of moisture that may be derived from deep ploughing, and are most likely to suffer from drought, the use of the subsoil plough would be attended with unquestionable benefit. On a field of my own, which had been set to an orchard, and therefore kept under the plough for some years, in attempting to underdrain a part of it that was usually flooded by water in the spring of the year, I noticed what the English call the "upper crust." This lay some inches below the surface, at the depth to which the land had been usually ploughed, formed by the treading of the oxen and the movements of the plough over it. This I found to be so hard as to be apparently as impenetrable by the roots as a piece of marble, and discovered to me at once the cause of the failure, in a great measure, of my crop of potatoes the year before. Having discovered what I supposed to be the cause of the failure, I set about devising measures to remedy it.

I have never seen a subsoil plough, there never having been one seen or made in this part of the country. I consulted my ingenious friends, Messrs. Prouty & Mears, and at my request, they made an instrument of very cheap and simple construction, consisting of a wooden beam, about three inches square, and three feet long, with three tines or teeth of the common cultivator, placed in a direct line in the beam, extending about eight inches below the beam; to this handles were attached similar to the handles of a plough. On trying this by running after the drill plough, I found, in my hard stony subsoil, it was quite inadequate to the business, being too light and of insufficient strength. I then had one constructed of similar plan, but much heavier and stronger. The beam five feet long, six inches square, of white oak, well ironed, with three tines in nearly a right line, made of the best Swedes iron, one and a half inches square, extending twelve inches below the beam, with a spur at the foot, some less than that of the tine of the cultivator, with strong handles and an iron beam extending from each handle to the centre of the beam, by which the balance is easily preserved. This implement, drawn by two yoke of oxen, followed the drill plough in getting in carrots, and performed the work better than I had anticipated. The "upper crust" gave way, the resistance made by the hard gravelly bottom and smaller stones was readily overcome. The earth was loosened in most places twelve or fourteen inches from the surface, and though not so thoroughly pulverized as it probably would have been by a perfect subsoil plough, yet in my very hard, stony subsoil, I am inclined to believe, that for simple drill husbandry, this will be found to be a valuable substitute for the English subsoil plough. And considering the small price of the implement, and the greater ease with which it is worked, the friction being

much lessened by dispensing with the sole, I shall continue to use this until I can find a better. A part of my crop of carrots was sowed upon the same land appropriated for that crop last year; no more manure was applied than in the previous year, and notwithstanding the severe drought which greatly injured most of our root crops, my crop on this piece of land was nearly double to that of last year. There is no known cause to which I can attribute this great increase of the produce, but the use of my newly constructed substitute for a subsoil plough. The soil was stirred to the depth of fourteen inches; by this means the roots of the carrots were enabled to strike deep, and thereby not only find more nourishment, but to overcome, in a great measure, the effects of a very pinching drought. E. PHINNEY.

Lexington, Mass.

AN EXPERIMENT IN FATTENING WHITE AND BLACK BERKSHIRE PIGS.

From the Kentucky Farmer.

I send you an experiment made by Mr. Fanning (editor of the Tennessee Agriculturist) and myself in feeding pigs. This experiment grew out of a controversy whether there were Berkshire hogs of any other color than those that are almost black. I maintained that there were *white* hogs descended from the Berkshire family, that were *better* than the black ones, possessing early maturity and fattening qualities not possessed by the blacks. Mr. Fanning predicted that the whites would prove themselves far inferior to the blacks, the *ne plus ultra* of the hog kind.

I proposed feeding pigs six months to test their early maturity and fattening qualities, to which he acceded, but objected to my feeding one from a black Berkshire sow by my white boar. He preferred that I should feed a cross of the white Berkshire and Woburn.

Mr. Fanning selected two pigs by his imported black Berkshire boar Earl Spencer, dam the imported black Berkshire sow Mary.

I selected two pigs by my imported white Berkshire boar Albion, dam my Woburn sow Courtenay.

Mr. Fanning weighed and commenced feeding at two months old, and at six months his pigs weighed, Sally B. 145, Black Rose 136 lbs. His gain (supposing Black Rose weighed as much at the commencement as Sally B. for he does not give her weight at commencement,) gained in *four* months 221 lbs.

I did not commence full feeding of mine until 20th January, when they were 4 months and two days old. Bernice weighed 20th January, 116 pounds, on the 20th February, 185 lbs., on the 22d March, 254 lbs., on the 20th April, 303 lbs., on the 20th May, 342 pounds.

Bertha weighed on 20th January, 4 months and two days old, 108½ lbs., on the 20th February 174 lbs., on the 22d of March, 232 lbs., on the 20th of April, 285 lbs., on 20th May, 340 lbs., My pigs gained in *sixty one* days 261 lbs., forty pounds more than Mr. Fanning's gained in *one hundred and twenty days.*

Mr. Fanning proposed keeping an account of food given to each, but I find he has failed to do so. I had an account kept of all that was given mine, but no account of what was taken from them again. For there was more food given than they would eat, and before they were fed again whatever had been left was given to other pigs. SAML. D. MARTIN.

Colbyville, Ky.

OF BOTTOM HEAT.

From Lindley's Horticulture.

This term is, in common practice, made use of only in those cases where the temperature of the soil in which plants grow is artificially raised considerably above that which we are acquainted with in England; and there seems to be a general idea that such an artificial elevation of temperature is only necessary in a few special instances. It has, however, been shown that the mean temperature of that part of the soil in which plants grow is universally something higher than that of the air by which they are surrounded, and consequently it appears that nature, in all cases, employs some degree of bottom heat as a stimulus and protection* to vegetation. At the same time, it must be admitted that, in some cases, the amount is extremely small; for Von Baer found *Ranunculus nivalis* and *Oxyria reniformis* flowering in Nova Zembla, where the soil was not warmed above 34½°; and, in Jakutzsk, Erdmann states that summer wheat, rye, cabbages, turnips, radishes, and potatoes are cultivated, although the ground is not thawed above three feet in depth.

That elevating the temperature of moist soil produces an unusual degree of vigor in plants unaccustomed in nature to such an elevation, is a fact which requires no proof: it is attested by the condition of vegetation round hot springs, and in places artificially heated by subterraneous fires; and this has probably been the cause of the employment of tan and hotbeds, by which means bottom heat has been generally obtained for rearing delicate species, and especially seeds. But if this stimulus acts in the first instance beneficially in all cases alike, it soon becomes a source of mischief in those species which are natives of climates where such terrestrial heat is unknown, the latter "drawing up," as the saying is, becoming

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* That the warmth of the soil acts as a protection to plants may be easily understood. A plant is penetrated in all directions by innumerable microscopic air passages and chambers, so that there is a free communication between its extremities. It may therefore be conceived that if, as necessarily happens, the air inside the plant is in motion, the effect of warming the air in the roots will be to raise the internal temperature of the whole individual; and the same is true of its fluids. Now, when the temperature of the soil is raised to 150° at noonday by the force of the solar rays, it will retain a considerable part of that warmth during the night; but the temperature of the air may fall to such a degree that the excitability of a plant would be too much and suddenly impaired, if it acquired the coldness of the medium surrounding it; this is prevented, we may suppose, by the warmth communicated to the general system from the soil, through the roots; so that the lowering of the temperature of the air, by radiation during the night, is unable to affect plants injuriously, in consequence of the antagonist force exercised by the heated soil.

weak and sickly, and speedily presenting a diseased appearance.

On the other hand, it is equally well known that, unless the temperature of the soil be raised permanently to at least 75°, the seeds of tropical trees will not germinate; or, if they do, they push forth feebly, and from the first present the sickly appearance of plants suffering from cold. Hence arises the impossibility of making the seeds of tropical plants germinate when sown in the open air in this country, where the mean temperature of the earth seldom rises to 65°, and that for only short periods of time. It is, therefore, obvious that all plants require some bottom heat; but the amount varies with their species, and the only means or power of determining what the amount should be, is afforded by the known degree of warmth of the climate of which a plant may be a native.

When plants are cultivated in glass houses, there is little difficulty in supplying them with the amount of bottom heat which they may require; but this can either not be effected at all, or only to a limited degree by a selection of soils and situations, when plants are cultivated in the open air; and hence one of the many difficulties of acclimatizing in a cold country the species of a warmer climate. It is true that plants will exist within wide limits of temperature, and, consequently, a few degrees of difference in the natural bottom heat to which they are exposed may not affect them so far as to destroy them; but it cannot be doubted that the conditions most favorable to their growth are those which embrace a temperature rather above than below that to which they are accustomed in their native haunts.

The orange tree is found in perfection where the temperature of the soil may be computed to rise to 80° or 85°, and never to fall below 58°, as in the Bermudas, Malta, and Canton. How injudicious, then, is our practice of exposing it during summer to the open air, in tubs, where the soil scarcely rises in temperature above 66°, and preserving it during winter in cold conservatories, the soil of which often sinks to 36°; under such circumstances the orange exists indeed, but where are the perfume and juiciness of its fruit, and where the healthy vigor of its noble foliage? The vine cannot be grown in the open air of this country to any useful purpose, except when trained to walls, in soils and situations unusually exposed to the beams of the sun; it is only then that it can obtain for its roots such a permanent warmth as 75°, which it will have at Bordeaux, or 80° in Madeira.

It may hence be considered an axiom in horticulture, that *all plants* require the soil, as well as the atmosphere, in which they grow, to correspond in temperature with that of the countries of which they are natives. It has also been already shown, that the mean temperature of the soil should be a degree or two above that of the atmosphere.

This explains why it is that hardy trees, over whose roots earth has been heaped or paving laid, are found to suffer so much, or even to die; in such cases, the earth in which the roots are growing is constantly much colder than the atmosphere, instead of warmer. We have here,* also, the cause of the common circumstance of vines that are forced early not setting their fruit well, when their roots are in the external border and unprotected by artificial means; and to the same cause is often to be ascribed the shrivelling of grapes, which, as we all know, most commonly happens to vines whose roots are in a cold and unsunned border.

Mr. Reid of Balcarras has, indeed, shown that one of the causes of canker and immature fruit even in orchards is the coldness of the soil. He found that, in a cankered orchard, the roots of the trees had entered the earth to the depth of 3 feet; and he also ascertained that, during the summer months, the average heat of the soil, at 6 inches below the surface, was 61°; at 9 inches, 57°; at 18 inches, 50°; and at 3 feet, 44°. He took measures to confine the roots to the soil near the surface, and the consequence was, the disappearance of canker, and ripening of the fruit. (*Memoirs of Caledonian Hort. Soc.* vi. part 2; and *Gardener's Magazine*, vii. 55.)

If, on the other hand, we take cases of growth in the artificial climate of hot-houses, we find that Bignonia venusta, and many other tropical plants, will not flower unless in a high bottom heat; and that palm trees, planted in the soil of conservatories which it is impracticable to heat sufficiently, soon become unhealthy.

The reason why it is necessary to plants in a growing state, that the mean temperature of the earth should be higher than that of the air, is sufficiently obvious. Warmth acts as a stimulus to the vital forces, and its operation is in proportion to its amount, within certain limits. If, then, the branches and leaves of a plant are stimulated by warmth to a greater degree than the roots, they will consume the sap of the stem faster than the roots can renew it; and, therefore, nature takes care to provide against this by giving to the roots a medium permanently more stimulating, that is, warmer, than to the branches and leaves.

Such being the fact, it is obvious that one of the first of a gardener's cares should be, to secure

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* Mr. Knight long since mentioned an important fact connected with this subject:—"It is well known," he said, "that the bark of oak trees is usually stripped off in the spring, and that in the same season the bark of other trees may be easily detached from their alburnum, or sap-wood, from which it is, at that season, separated, by the intervention of a mixed cellular and mucilaginous substance; this is apparently employed in the organization of a new layer of fibre, or inner bark, the annual formation of which is essential to the growth of the tree. If, at this period, a severe frosty night, or very cold winds, occur, the bark of the trunk, or main stem, of the oak tree becomes again firmly attached to its alburnum, from which it cannot be separated till the return of milder weather. Neither the health of the tree, nor its foliage, nor its blossoms, appear to sustain any material injury by this sudden suspension of its functions; but the crop of acorns invariably fails. The apple and pear trees appear to be affected to the same extent by similar degrees of cold. Their blossoms, like those of the oak, unfold perfectly well, and present the most healthy and vigorous character; and their pollen sheds freely. Their fruit, also, appears to set well; but the whole, or nearly the whole, falls off just at the period when its growth ought to commence. Some varieties of the apple and pear are much more capable of bearing unfavorable weather than others; and even the oak trees present, in this respect, some dissimilarity of constitution." *Hort. Trans*, vi. 229.

the means of insuring a proper temperature to the soil in which he grows his plants, and that this is requisite for hardy as well as tender species; and I entertain little doubt that the time is at hand when it will be considered quite as necessary to furnish heat for the soil as for the air; not, however, heat without moisture, for that would evidently produce much greater evils than it was intended to cure, as has indeed been found by inconsiderate experimenters. I quite agree with Mr. Writgen in believing that it is the temperature and moisture of a soil, much more than its mineralogical quality, that determine its influence upon vegetation. (See *Erster Jahresbericht, &c., am Mittel und Nieder-Rhein*, p. 64.)

Mr. Fintelmann, the king of Prussia's gardener at Potsdam, is celebrated for his success in the difficult art of forcing cherries, and he has given an account of his practice, (*Gard. Mag.*, vol. iii., p. 64,) in which it appears that the most peculiar feature is the strict attention he pays to the temperature of the roots. He first soaks the roots in water heated by the mixture of equal parts of boiling and cold water; he afterwards sprinkles the trees with lukewarm water, and he continues to employ it of the same temperature as long as watering is required.

It seems indeed clear, that the success of the Dutch in obtaining an abundance of fresh vegetables, such as lettuces, during the whole winter, is in part owing to their being able to maintain a gentle bottom heat. No doubt this is connected with the abundant light which their forcing structures admit, and with other causes of considerable importance; but none of those causes can be supposed likely, in the absence of the bottom heat, to produce such a result as the Dutch gardeners obtain.

If it is necessary that the temperature of the *soil* in which plants grow should be carefully regulated, and adjusted to their natural habits, it is no less requisite that the *water* in which aquatics are cultivated should be also brought to a fitting heat. Mr. William Kent succeeded well in making many tropical species flower, by growing them in lead cisterns plunged in a tan-bed, (*Hort. Trans.*, iii. 34,) in a close heat. In like manner, Mr. Christie Duff procured flowers in abundance from *Nymphæa rubra, cærulea and odorata* by placing them in a cistern in a pine stove upon the end flues, where the fire enters and escapes; or by plunging them into tan-beds in pine houses, varying in temperature from 80° to 100°. (*Hort. Trans.*, vii. 286.) Very lately, Mr. Sylvester, of Chorley, in Lancashire, obtained fine flowers from *Nelumbium luteum*, by paying attention to the temperature of the water. When he kept the latter at 85°, the plants grew vigorously, and were in perfect health, but flowerless; but by lowering it to 70°–75°, which more nearly approaches the heat to which the plant is naturally accustomed, the magnificent blossoms were produced and succeeded by seeds; the red *Nelumbium*, however, which inhabits countries with a greater summer heat than the yellow, at the same time suffered by this lowering of temperature, none of its blossom buds having been able to unfold. (*Bot. Mag.*, xiii. n. s. t. 3753.) The water of rice fields, in which the red *Nelumbium* flourishes, was seen by Meyen at 113°, at Lantao, in China.

An opinion has, nevertheless, been entertained, that bottom heat is useless: there is in the *Horticultural Transactions* (vol. iii. 288,) a paper to show that it is injurious; and the authority of Mr. Knight has been referred to in support of the opinion, in consequence of that great horticulturist having expressed a belief that the "bark-bed is worse than useless." (*Hort. Trans.*, iv. 73.) But Mr. Knight repeatedly disavowed entertaining any such sentiments. In one place, he stated that the temperature of the air of the stoves in which his pine-apple and other stove plants grew, *without bark or other hot bed*, usually varied from 70° to 85°; and that the mould in his pots, being surrounded by such air, acquired and retained, as it necessarily must, very near the same aggregate temperature, but subject to less extensive variation (*Gard. Mag.*, v. 365); in another, he says the temperature of the air was varied in his stove generally from about 70° to 85° of Fahrenheit; and he ascertained, by keeping a thermometer immersed in the mould of the pots, that the temperature of the soil varied very considerably less than that of the air of the stove; the mould being in the morning generally some degrees warmer than the air of the house, and in the middle of the day, and early part of the evening, some degrees cooler. (*Hort. Trans.*, vii. 255.)

It is, therefore, clear that he considered a high temperature necessary for the roots of his pine-apple plants; and we find, from one of his papers, (*Hort. Trans.*, iv. 544,) that he considered it better to obtain the requisite temperature from the atmosphere than from a bark-bed, the usual source of bottom heat, "because its temperature is constantly subject to excess and defect;" and he even admitted that if the bark-bed could be made to give a steady temperature of about 10° below that of the day temperature of the air in the stove, pine plants would thrive better in a compost of that temperature than in a colder.

It is, therefore, plain that the dispute about bottom heat was not as to the necessity of it, but as to the manner of obtaining it, which, as it concerns the *art* of gardening, I need not further notice.

We have, doubtless, much to learn as to the proper manner of applying bottom heat to plants, and as to the amount they will bear under particular circumstances. It is, in particular, probable that in hot-houses plants will not bear the same quantity of bottom heat as they receive in nature, because we cannot give them the same amount of light and atmospheric warmth; and it is necessary that we should ascertain experimentally whether it is not a certain proportion between the heat of the air and earth, that we must secure, rather than any absolute amount of bottom heat.

It may also be, indeed it no doubt is, requisite to apply a very high degree of heat to some kinds of plants at particular seasons, although a very much lower amount is suitable afterwards; a remark that is chiefly applicable to the natives of what are called extreme climates, that is to say, where a very high summer temperature is followed by a very low winter temperature. Such countries are Persia, and many parts of the United States, where the summers are excessively hot, and the winter's cold intense. The seeming impossibility of imitating such conditions arti-

ficially will probably account for many of the difficulties we experience in bringing certain fruits, the Newtown pippin, the cherry, the grape, the peach, and the almond, to the perfection they acquire in other countries.

BERMUDA GRASS.

From the [Milledgeville] Recorder.

Messrs. Grieve & Orme :—In one of your March numbers, I invoked the attention of farmers to the exhausted condition of our farms; the ruinous policy of making cotton to purchase corn, flour, and pork with; and, in conclusion, I solicited the aid of the influential and intelligent, in arresting the evils that had and were likely to befal us. None having been aroused at the awful calamity that awaits us, I am constrained, still hoping, to appear over my humble signature again, to defend from the many curses that have been heaped upon it, and to recommend with confidence to farmers, a grass, the name of which heads this article.

I am aware of the Herculean task that I have undertaken, to defend and bring into popular favor a thing that has been almost universally condemned—that nearly every man is prepared to decide against before he hears the testimony; nevertheless, if any thing short of the resurrection of the dead will suffice, I am able to prove that the prejudices entertained against it, are from a want of a correct knowledge of it, both as regards the evils and benefits. Then first, the objections to it; and what are they? They are that where it once gets hold it never can be eradicated; and second, if a farmer gets even a small bed of it on his farm, that there is perfect certainty of its going all over it sooner or later; consequently ruin ensues to the farm. Are you acquainted with the Bermuda grass? does it bear seed? have you ever rubbed them out? Can you distinguish between that and two other grasses that resemble it in all its habits save that of bearing seed, both of which, as well as the Bermuda grass, are frequently by the unobserving called *wire grass*. The name is not applicable to either of the three grasses, but properly belongs to a native of the southern counties of Georgia; hence the name *wire grass counties*. The Bermuda grass, by being confounded with two other grasses very nearly resembling it, and by the imprudence of farmers, who have purchased their neighbors' lands, whose yards were planted in it, has suffered very great prejudice. First by being taken for a grass that is propagated, both from the seed and root; and second, from its becoming scattered over fields from the yards of old settled places, purchased by an adjoining farmer; the houses removed, the yard turned into the adjoining field, an attempt is made to eradicate the grass; the plough passes through the yard and on through the field; at every passage of the plough a sprig or root is taken out on the adjoining ground; it being tenacious of life takes root and grows; thus in a few years the field becomes infested with Bermuda grass, very much to the annoyance of the owner, chargeable to his own bad conduct however. It is abandoned for cultivation, and becomes one of the richest and best pastures, from which his cows return every evening with the milk streaming from their udders; from which he can take a fat lamb at pleasure, and on which his hogs keep fat without corn; therefore the curse, as he once considered it, was a blessing in disguise.

The two grasses that are confounded with the Bermuda grass, and somewhat resemble it, and very much resemble each other, both bear seed, and therefore are liable to be scattered by stock grazing on it when the seed are ripe. One is a native of swamp lands, will grow in the water, has a black seed when ripe, a jointed stem of a reddish purple color, takes root at every joint, the stem covered with a shuck on which the leaves are formed, around the base of the leaf is covered with a fine furze; in this it differs from the Bermuda, as well as its texture being coarser and not affording as much foliage, less velvet-like in its feeling, and not so grateful to stock. This grass grows on upland, and of a wet year luxuriantly. The other is a native of upland, approaching much nearer the texture of the Bermuda, with a purplish stem, with all the habits of the other, with the fine furze around the base of the leaf, and bears seed; it takes a close observer to distinguish between this and the Bermuda. These two grasses are natives of Georgia, and abound in the neighborhood of Greensboro, where you may also find the Bermuda grass. I have in that town, within five feet of the same spot, gathered sprigs of each, and convinced gentlemen of the difference between them. The Bermuda grass, as I am informed by a gentleman of this county, is a native of the island of Bermuda, was brought to this state by a gentleman who lived in the southern part of the state, and brought to this county from there for a yard grass. By this means it has found its way into most yards of middle Georgia, and by the means above stated, into a few fields. Wherever it has been cultivated for grazing, the most satisfactory result has been obtained. The Bermuda grass bears no seed; and as a proof of my conviction of this fact, I will present any man with a beaver hat who will present me with one half-pint of the seed of that valuable grass. There is therefore no danger of its being spread by stock; it will go no farther than it can run in a season, which on an average is about three feet, unless the sprig is carried by the plough or some other means; it is tenacious of life, and apt to live wherever dropped, especially in wet weather. A twelve-inch plank laid flat on the surface of the ground will confine it as long as the plank will last. It will not grow in the shade; a field of Bermuda grass surrounded with a fence permitted to grow up in the corners with bushes and briers, as they usually are in Georgia, will confine it for all time unless taken out by design. To the objection that it cannot be eradicated, I will remark that it can be as easily destroyed as the northern farmers destroy their herds-grass and green-sward, by the same sort of operation, or by covering it with litter and excluding the light and heat from it; and when the grass is destroyed you have a field richer than it ever was, if the grass had been on it ten or twelve years. There is, however, no necessity for destroying it, because it will pay a better profit for grazing than any land you cultivate. Experience has proved

that we need a grazing grass that will stand our long hot summers, that will through the year impart the greatest nutriment to the animal, that the tooth or the hoof will not destroy, and reappear the next spring without cultivation, with renewed vigor, and continue to do it for all time; Then you have it in the Bermuda grass; though the tooth of the animal may take off the foliage, and the hoof press the remaining stubble, it is not hurt; it puts forth with renewed vigor, and the hotter the sun the more luxuriant it is.

I am assured by a gentleman who was raised in the state of New-York, and that part most famous for grazing, that the Bermuda grass by far surpasses any grass for grazing that he ever saw in New York. I am also informed by a Kentuckian that it by far surpasses any of the grasses of that state for durability of grazing and ability to stand the length and heat of summer. I do know that horses, cows, sheep and hogs will get fat on this grass; that it will afford good grazing from the middle of April until the first of December, in this section of country; that it will grow well on poor land, and eventually make it rich. If it were necessary, I could name particular instances which have proved the value of this grass beyond dispute; but I deem it unnecessary, as the whole ground of objection to it is, the danger of its getting scattered over the farm, and the impossibility to eradicate it when so scattered. Now, knowing that the Bermuda grass bears no seed, that it can only be scattered by a sprig or the root, that it will not grow in the shade, consequently will not pass a Georgia fence, the corners of which are usually choked with bushes and briers—these facts, I say, have stripped it of all its imaginary horrors, and placed it in a position that justice may be done it; and for the benefit of the over-scrupulous I will assert, that I have known it in a yard for the last twenty-five years—lived on the place—the cows and horses were turned in daily through the summer to keep the grass down, and there never was a sprig seen any where on the plantation but in the yard. Another case: some fifteen years since, I knew a farmer to plant a lot of some five acres. It was separated from the cultivated land on two sides by a Georgia fence through which it has not passed to this day. It is admitted on all hands, notwithstanding our staple is cotton, that if we could raise the grasses as well as they can in the northern and western states, that we might raise our own horses, mules and pork; but while we have to resort wholly to the corn-crib, the thing is impracticable: we can make more money, and make it faster, to purchase those articles from the Kentuckians with a part of the proceeds of our cotton. This ruinous policy I will not stop here to controvert, even under the present uncultivated state of the grasses, but merely remark, if we had the money back from Kentucky—to say nothing of the interest—that we have paid for horses, mules and hogs, it would pay the whole indebtedness of Georgia, educate all its poor children, and there would then be a remaining surplus sufficiently large to establish a sinking fund, the interest of which would foster agricultural societies in every county in the state. In addition to this, but for the murderous policy of making cotton to purchase every other thing with, Georgia might have been the garden spot of the world, and her inhabitants the most independent of any other people.

In this apparent digression I have not lost sight of my subject; in fact it is intimately connected with it; for I look to Bermuda grass as best adapted to our climate of any other for grazing, that by its cultivation we will be able to compete with Kentucky in raising stock. As soon as this fact is believed—and believed it will be, if no other way, from sheer necessity—we shall begin to look up; for then every farmer will have to sell a little corn, a little pork, a few bushels of wheat, fodder and oats, every year, and occasionally a horse or mule. No argument need be used or proofs adduced to show the ability of the Bermuda grass to bear grazing or impart nutriment to animals; and having shown that the objection to it is ideal, that it will not spread without design or bad management, and that it can be eradicated at pleasure, I can, with some hope of success, recommend to every farmer the selection of some suitable exhausted field, in quantity sufficient for the stock that he necessarily has to keep, with running water in it, having such location as will be most convenient for the turning in and out of stock. This done, and in three years it will be worth more to him per acre than the best land he cultivates in cotton, and that at fifteen cents per pound. If any one doubts the latter assertion, I have the proofs at hand.

CLODHOPPER.

Hancock, June 8, 1841.

MANURINGS—IMPROVEMENT.

To the Editor of the Farmers' Register.

Thinking it likely that some fellow agriculturist may gather a valuable hint by the promulgation of my manuring operations, I send the following. I count my manurings from July till July, and although the operative year has not closed, yet having at this time nothing else to attend to, (it being a rainy day,) I will copy from my memorandum book so far as it goes, and guess at the balance.

	Ox cart loads.
Moved and spread rich mould, - -	1500
" from hog yards, - - - -	223
" from horse yards, - - -	187
" from cattle yard, - -	590
" damaged straw, hay and chaff, -	20
Actually carted out to 4th May, - -	2520
On sheep yard suppose, - - - -	50
Tobacco trash and ashes in houses, -	10
300 bushels ashes equal to, - -	60
Compost, dead animals, ashes and mould,	150
Yet to come from horse yard, - -	40
	2830
Ploughed down 50 acres of millet, rye and peas since July, equal to - -	1000
Cut down 25 acres heavy timber to rot,	600
Drift mould and waterings on millet, -	250
Out feedings of sheep and cows, -	250
	4930

As to the tobacco trash, ashes, and yet to come

from horse yard, I am persuaded my estimate is too low. As to the composted dead animals the quantity will actually be about 50 loads, which I have computed as equal to 150 loads of common dung. The balance of the account is genuine guess work; but I think I have guessed reasonably. Thus it will be seen, that by the first of July I will have moved and spread about 2665 ox-cart loads of manure, the value of which I would estimate as equal to 2115 loads of dung; to which add 1000 loads for green fallow, 600 for rotten timber, and 500 for drift mould and out feedings, and we have a sum total of 4215 ox-cart loads of dung. At 50 loads to the acre, I will have manured 84 acres; and having only six laborers at my place of residence last year, I will have manured 14 acres for each hand. My resources for manure, are the offal of Indian corn, rye, wheat, oats, millet, peas, hay, leaves from woods, saw dust, ashes, mould, green weeds and grasses, and dead animals. My cattle yards are littered with corn stalks, leaves, and straw. My horse yard is littered with leaves, and saw dust. My hog yards are littered with leaves, corn cobs (which the hogs eat,) green corn stalks, green weeds, &c. The carted mould is obtained from reservoirs made for the purpose. The drift mould is cast on, or floated on, from ditches around the hills. The saw dust is obtained from a saw mill, and amounts to an average of about 50 loads the year, but if properly secured would be at least 400 loads the year. I have used the mould from my reservoirs, under, in, and on my manure banks; but this year the greater portion, viz., the 1500 loads, were spread directly on the field, and I am inclined to think that I shall continue the practice.

Fifteen years back my lands were dead, and my cattle, sheep, and hogs dying; but now my lands and stock of animals are in good heart. But perhaps one may ask, if my stock are all in good heart, whence comes this 50 loads of composted animal matter? Well, friend, the truth shall come, out of 220 grown sheep I had about 25 to die, and out of about 85 lambs I had about 35 to die; besides one old cow and one runt calf; all of which are neatly vaulted, and undergoing decomposition and composition. When it is remembered that we had a hard winter, and a tight spring; and when I state that I have been housed nearly all the winter with rheumatism; and furthermore that my horses and hogs are all fat, nor have I lost one, I hope I shall be acquitted, at least of murder in the first degree.

The compost from my vault is intended for turnips, and by using a considerable portion of strong ashes, it is expected to be ready for use by the first of August. I am now engaged in carting leaves into my horse and hog yards, and expect to get in 600 loads before I cease; and next year hope to cart out double the above quantity. If I were not a grower of tobacco, I could now begin to farm in good order; but I need pasture grounds, and tobacco is the best preparatory crop.

My mould having been piled, is mostly carted in the dead of winter, when it has to be bursted up with a crow bar; thus I move heavy loads, and economize time. Saw dust will not act directly as manure unless the acid which it contains is neutralized by lime, ashes, or strong dung; hence my reason for composting it. A considerable portion of my bottom grounds, and some of my hills, were a few years past of very acid character, but by deep ploughings and manurings they are now generally warm and productive. I have used no lime as it would cost me about 30 cents the bushel; nor have I used many ashes until last year.

Before I close, I desire to say a few more words on the subject of the dead sheep, as it seems to me this is the only dark part of my story. I had the misfortune to loose one fifth part of my flock, lambs included; now reader, what portion did you lose? And finally I have several sheep of full blood, both grown and lambs, not one of which is dead or missing—and why? because they were well attended, and perhaps more healthy.

My sheep will in a few days be washed in a yard on which leaves have been spread, the manure from which, with that from the hog yard, will not be moved till next winter.

ZA. DRUMMOND.

Amherst, May 5th, 1841.

ORNAMENTAL GROVES.

To the Editor of the Farmers' Register.

Who is there conversant with ancient history, that has not read of the groves of Academus, and, in our own day, heard much of the knowledge acquired, and pleasures enjoyed, beneath academic shades? But of these pleasing topics I shall not speak, whilst reformation is called for *nearer home*. Every lover of nature has been frequently surprised at the indifference which exists in the community respecting tastefully set groves. In nothing has nature been more prodigal of her charms than in the vegetable kingdom; and, next to a well-regulated farm, it is peculiarly delightful to see a choice selection of trees and shrubs around the family mansion. The snug log-cabin as well as the costly palace are thus alike improved in appearance, and enhanced in value, through the simple agency of *natural association*. How sultry and uninviting the prospect around that house, where are no trees to be ruffled by the passing breeze, and to comfort with their shade under the ardent heats of summer. The *lack* is apparent—the *nakedness felt*, as we approach such a dwelling. Can it be wondered at, then, that Solomon "spoke of trees, of the cedar tree that is in Lebanon, even unto the hyssop that springeth out of the wall," and that many of his most choice comparisons are drawn from the *natural beauties* with which he was surrounded. Where can we find all the colors of the rainbow, with a thousand other variegated tints of indescribable delicacy, so richly portrayed as in the wide domain of nature?

Below are briefly pointed out a few of those trees and shrubs indigenous to the United States, and best adapted for useful or ornamental purposes, with their popular names attached.

Robinia, pseudo-acacia—black locust, false acacia. This is not only an ornamental, but extremely valuable tree. It bears transplanting remarkably well, will vegetate from the seed, is of vigorous growth, and constitutes the most durable material for garden or fence posts in the United

States. Nothing but its scarcity prevents it from being used extensively in ship-building. It should be propagated abundantly on every farm for useful purposes. The mulberry, of different species, ranks next to it in point of durability. Grows vigorously along the margin of large water-courses, but is sparingly dispersed.

Robinia viscosa—clammy locust, rose locust. This is a small tree with beautiful rose-colored flowers, generally in pendent racemes. It bears transplanting, and soon attains a sufficient size to display its bloom. It is peculiarly adapted to ornamental purposes, and is just beginning to be cultivated and prized near its native localities. Its young wood is covered with a viscid pubescence; hence its name. Grows along the mountain streams of Carolina and Georgia.

Robinia hispida—hispid locust, rose locust. This is a small but handsome species, seldom exceeding three feet in height. Flowers larger than in the preceding species; in pendulous racemes. Much of the shrub is very *hispid*, or covered with short, stiff hairs. Grows on dry ridges.

Magnolia macrophylla—magnolia. This is, perhaps, the most splendid flowering tree in America. The localities of this interesting species are extremely few. Its most noted southern locality is in Lincoln county, N. C., where it grows in considerable abundance, and from which source many of the northern botanic gardens have been supplied. It is chiefly found in the south-eastern part of the county, on many of the abrupt but fertile hill-sides. It prefers a northern exposure, thus indicating a *cool situation* to be its most favored *retreat*. Its blossoms are of a snowy whiteness, from six to ten inches in diameter, attached to the extremities of its branches, thus fairly unfolding its beauties. The leaves vary from 20 to 30 inches in length, and from 10 to 15 inches in breadth. It should be transplanted late in the fall, or in the winter; and to ensure its future growth it is always advisable, when it can be done, to remove some of its native soil. It flourishes best in a light, *virgin* soil, and where it is *kept cool* and damp by surrounding trees.

Magnolia acuminata—cucumber tree. This is a much more common, and rather hardier species than the preceding, but of less attractive grandeur. It is sparingly cultivated.

Magnolia grandiflora—magnolia. This is also a magnificent tree, rising from 60 to 80 feet in height, with a smooth columnar trunk, and crowned with a beautiful pyramidal head of sweetest perennial verdure. It grows abundantly in Florida and along the sea-coast of Carolina and Georgia, extending some distance into the country.

Chionanthus Virginicus—fringe tree, white ash. A hansome bush, sparingly diffused along our water-courses, varying from 6 to 12 feet high, and may be readily recognised by its numerous pendant blossoms like fringe.

Calycanthus floridus—Carolina allspice, bubby blossoms, &c. A small odoriferous shrub, from 3 to 6 feet high, with dark brown flowers, and agreeably scented, like ripe strawberries. Grows generally in fertile soils near small water-courses. The wood, and particularly the root, is strongly camphorated.

Æsculus flava—buckeye, horse-chestnut. This is our most common species, and sufficiently handsome to merit cultivation. Elliott says "the root of the buckeye is used as a substitute for soap in washing woollen clothes."

Pyrus coronaria—crab apple. This is a well known tree. Under proper management it presents an oval top, covered in the spring with a rich profusion of the most fragrant flowers. It should find a place in every ornamental grove. From it, by judicious culture and grafting, has sprung the great variety of cultivated apples: a convincing proof of what astonishing changes culture will produce.

Kalmia angustifolia—laurel, calico bush, ivy. Handsome evergreen shrubs, common on water-courses, but are not successfully transplanted unless a considerable portion of the circumjacent earth is removed with them. Another species (kalmia latifolia) is occasionally found, of nearly similar beauty. The leaves of both are poisonous.

Rhododendron maximum—mountain laurel.—This is also a beautiful shrub, but more confined to mountain declivities and precipitous heights. Like the preceding, it does not flourish well in gardens or enclosures, seeming to require cool, perennial streams for its support.

Euonymus Americanus—strawberry tree, burning bush, &c. A shrub from 3 to 6 feet high, with deep-green branches. Grows in rich, damp soils. The fruit, when mature, resembles strawberries, and thus renders the tree ornamental.

Juniperus Virginiana—red cedar. This is the only indigenous tree in the south which has become a general favorite in our yards, and which every body knows. This is as it should be. It is an evergreen, and forms an agreeable contrast in the gloom of winter, when all other trees are stripped of their foliage.

Pinus canadensis—hemlock spruce. A beautiful tree, common in our mountains, rising from 30 to 100 feet in height, presenting a handsome sugar loaf top. It richly merits a place in our enclosures.

Quercus phellos—willow oak. An aquatic species, but adapts itself to most of our clay soils, and forms a handsome tree.

Ulmus Americana—American elm. This is our most common species. When transplanted in a rich, loamy soil, it grows rapidly, and forms a magnificent shade tree, possessing highly attractive qualities under a midday August sun.

Salix Babylonica—weeping willow. A well known tree, introduced, but now naturalized. It has numerous pendant branches, of *sorrowful*, but *interesting* appearance. "Supposed to be the willow on which the Israelites hung their harps when captive in Babylon." May it not typify "the joys of grief?"

Catalpa cordifolia—Catalpa tree. A handsome tree when young and vigorous; said also to be a native of Japan. Rarely to be met with decidedly indigenous in the United States, and appears to have been introduced by the *aborigines;* hence its name is supposed to have been derived from the Catawba tribe of Indians, residing on the river of the same name. Its wood is said to be durable, being split for rails in the forests of the Wabash, Ill., where it grows in considerable abundance in a few localities. Grows also sparingly in the Carolinas and Georgia.

The above is but a meager enumeration of indigenous trees and shrubs that might be used to decorate our enclosures. In the grove surrounding

my family mansion, containing about one acre and a fourth, are now growing upwards of forty different species of trees, which number I expect to increase as opportunities may present themselves, not, however, to the entire exclusion of a few ornamental exotics.

I cannot conclude without noticing a handsome vine, Lonicera sempervirens, woodbine. It has crimson colored blossoms, and is sparingly scattered over our southern country. It bears transplanting, and forms a spiral wreath sufficienly handsome for some bridal occasion. Our southern ladies are beginning to cultivate it; and having *pliancy* as well as *beauty*, it will be adequately adapted to *wind up* my essay. Respectfully yours, C. L. HUNTER.

ON A NEW MODE OF TRANSPLANTING TURNIPS.

(Prize Essay of the Highland and Agricultural Society.)

By James Howison, esq., of Crossburn House, Lanarkshire.

From the London Farmers' Magazine.

I am aware that, in some instances, with the Swedish variety of turnips, trials on a small scale have succeeded by following the same steps as in transplanting kale plants, and which success I ascribe to the formation of the Swedish turnip roots greatly resembling those of kale in size and firmness, properties which all the other varieties possess in a very small degree. It is owing to this circumstance, I am of opinion, that all the attempts to transplant the others in the same way have failed, as will be seen in my mode, which, although easy and quickly performed, requires a good deal of method.

I shall describe in detail the method followed by me from the forming of the drills to the finishing of the transplanting of the young plants.

1. In an open piece of ground I form raised drills at the distance of twelve inches from centre to centre, in each of which I place a layer of short stable dung, closely laid on, on which the turnip seed is pretty thickly sown, and afterwards covered with half an inch of fine mould. The breadth of the drills at top should not be more than four inches, so that the earth and plants may be more completely lifted up together by the spade, when to be transplanted. The time of sowing should be regulated according to the purposes intended; and as a fall of ground converted into drills will produce plants sufficient for transplanting three or four acres, it is better always to have a superabundance. As to the best age for taking up the plants, I have found no difference in their success from the time they have got their proper leaves, until they are three or four months old; however, those intended to remain long should be thinned out in the rows. I need scarcely mention that, in dry weather, they should be carefully watered, which in so small a space can easily be done, and which is one of the great advantages which this mode has over the turnip seed sown in the field, where, if no rain falls, it may remain for weeks without vegetating.

2. I shall now state the method followed in removing the young plants from the drills, and transplanting them out in the field, after the ground has been ridged up in the usual way; but I must first observe, that I consider rainy and cloudy weather as of the utmost importance to successful transplanting; and so much so, that I prefer waiting weeks to attempting it in sunny and dry weather. Having provided a wheel-barrow, a garden spade, and a couple of flower-pot saucers of a large size, I with the spade lift up its breadth of one of the drills, taking care that the spade enters below the roots of plants. This spadeful is then carefully placed in the barrow, and the same operation is repeated until the quantity of plants wanted is taken up. When that is done, they are then removed in the barrow to the field, where they are transplanted with the implements above mentioned.

It is necessary for expedition that two persons be employed in the transplanting—one to prepare the plants, the other to transplant them. One spadeful is then taken from the barrow, and with a knife divided in three or four pieces, one of which is taken up into the hand and carefully drawn asunder, so as to lay open the roots of the plants with as little injury to them as possible, and, taking hold of the leaves of the one that appears uppermost, draw it gently out with as many of the little balls of earth and dung adhering to its tender roots as practicable, and place it in one of the saucers. In this way, when the saucers have been carefully filled with the plants laid in regular rows, the transplanter may commence his operations.

He then with his finger, or a short dibble not thicker than his finger, makes a hole which should only reach to the dung; and then, lifting a plant by its leaves, drops it into the hole, and with the fingers of both hands presses the earth gently around it. In this way two drills may be planted at the same time.

His assistant, following with the barrow, will be able to supply him with prepared plants; and, from my experience, the two should be able to finish a rood of ground in the course of the day, if the plants are eight inches distant from each other.

I must here warn the transplanter against using plants that have not one or more balls of dung or earth adhering to their roots; for if he does, the chance of their growing will be very small.

3. I may now mention what I conceive to be the advantages that raising plants in seed-drills for transplanting has over the present mode of field sowing. In the first place, as already noticed, when the turnip-seed is sown at large in the field, should it not rain, it is liable to remain for weeks without vegetating; and even if regular showers fall, the crop is liable to suffer greatly from the fly; both of which evils are prevented by raising the plants in drills, as these can be regularly watered, and the plants are too numerous, from the thick sowing, to be much hurt by the fly. In the second place, in the case of a failure in the potato crop, such as took place a few years ago to so serious an amount, the length of time that elapses before potatoes appear above ground, and a certainty of crop can be ascertained, it is too late to attempt planting a second crop of potatoes on the same ground, or even *sowing* it with turnip

seed, to have any prospect of a crop. Now, as potato-drills are made up in the same way as for turnips, by transplanting them with turnip plants two or three months old, the potato ground might be stocked immediately with the probability of a crop of turnips equally good as if sown with seed at the proper season. In the same way, the head and foot ridges of potato and turnip fields, which at present are left unoccupied to allow the turning of the horses and ploughs in the working of these crops, might be planted with turnips, as also all vacant grounds in gardens, after the gathering of the early crops.

4. In farther proof of the practicability of my plan, it may be satisfactory to mention that, on the 9th of October, 1839, I went to examine a field of turnips on the farm of Green Burnside, in this parish, tenanted by Mr. James Cassie, who in consequence of the great ravages of the fly, had resolved to try the transplanting plan according to my directions; but having no prepared plants, he took plants with great care from the thickest parts of the drills that had escaped the ravages of the fly, and filled up the blanks to a certain extent; and not having much confidence in my method, the blanks on the remainder of the drills were, at the same time, sown with seed, so that I had an opportunity of seeing at once three crops of turnips raised in a different manner. The crop from the first sowing that had escaped the ravages of the fly was excellent; the transplanted very good, but the turnips not so large in general as the first; the third, although sown on the same day as the others were transplanted, were none of them the size of an egg, which I believe is always the case with late-sown turnips, although the result is difficult to be accounted for.

5. I may, in conclusion, mention another advantage of the transplanting plan—that it is *best* performed in *wet* weather, when all other field labor is at a stand.

ON THE APPLICATION OF BONES TO GRASS LANDS, ON LORD COMBERMERE'S ESTATE.

From the London Farmers' Magazine.

Within the last nine years Lord Combermere has supplied his tenantry (upon the Combermere estate in Cheshire) with bones for upwards of 600 statute acres of their pasture land, at a cost of about 10*l*. an acre. The land before the bones were applied was not worth more than from 10*s*. to 15*s*. an acre [rent]; it is now well worth from 30*s*. to 40*s*. His lordship charges the tenantry 7 per cent. upon the outlay; they would gladly pay 10 per cent. rather than not have the bones. Old sour turf upon a clay subsoil is the land that answers best to manure with bones, though I have seen them used upon a dry, friable soil and a sandy substratum with success. I have never known them to fail when there is a strong turf, and the land free from water. Upon Lord Combermere's estate bones are not allowed to be put upon land until it has been down in grass at least seven years. In very few instances where land has recently been in tillage have I known bones to answer well. The end of April I consider the best time to apply bones; no stock ought to be put upon the land before the following spring. If the land is not too poor to produce a crop of hay, I do not object to its being mown the first year, but on no account afterwards. Thirty to 35 cwt. is the quantity used upon a statute acre, according to the quality of the land; or if bought by the bushel, one bushel of bones to a rood of 64 square yards; if the land is very poor, 90 bushels to a statute acre. An imperial bushel of bone dust should weigh from 45 to 47lbs. if ground fine enough. I prefer them ground to about the size of a walnut. It is now 20 years since I first saw bone dust applied to pasture land, on a field adjoining Lord Combermere's estate. At the time the bones were put on the land, it certainly was not worth more than 10*s*. an acre, and though so long a period has elapsed since the field was manured with bones, it is now worth 35*s*. per acre, though I think the land is not quite so good as it was five years ago. I consider bones the cheapest of all manure for mowing-grounds. Eight years ago, I manured part of one of my mowing fields with bones, 35 cwt. to the acre, the land has produced me a good crop of hay every year since, quite equal to the other part of the field which has been manured with good farm-yard dung every two years. Once in eight or nine years is quite often enough to manure mowing lands with bones; and I am quite certain that pasture land on which bones have been applied never will (so long as it remains in grass) return to the state it was in before the bones were put on. The price I paid for bones last spring, was 2*s*. 8*d*., per bushel; or if by weight, 6*l*. 15*s*. per ton. They are now a little lower; I can purchase them at 2*s*. 6d. per bushel, or 6*l*. 6*s*. per ton, that is for the raw bones. The boiled bones are at 4*l*. 15*s*. per ton, but I do not consider them any cheaper than the raw ones, as being wet they weigh much heavier; two tons of boiled bones are not more than equal to 30 cwts. of the raw. I give the preference to the latter, if they can be got pure; but I have not had such long experience as to assert confidently that they are the best as to durability. In the year 1828, one of Lord Combermere's tenants manured five acres of pasture land with boiled bones, and in the same field two acres with raw bones; both answered well, and at this moment I do not observe any difference, both still equally retain their fertilizing qualities. I find a great difficulty in procuring good fresh bones, as the manufacturers buy them up to make size of; old bones (such as the greater part of those are which are imported from Ireland and the continent) will not do for this purpose, and it is my opinion that the fresh bones are not so much deteriorated by boiling, but that they are quite equal as a manure to those we get from the bone-dealers as fine bones, most of which are old, and consequently have lost a great part of their fertilizing powers.

EDWARD HILLYSE.

Haywood Farm, Nantwich, Cheshire.

GUANO MANURE.

From the London Farmers' Magazine.

Alfred Castellain, esq., of Liverpool, informed the Council, that having observed a reference made in Professor Sprengel's article, on "Animal Manures," published in the 4th part of the So-

ciety's Journal, (page 494,) to the cormorant or gull manure occuring in immense quantities on some islands lying off the coast of Peru, termed "guano," and used with the most striking effects in Peru for manuring the maize-fields; he thought it might interest the members of the Society to know that two cargoes were then on the way from Peru to Liverpool, and that their arrival might be expected in the course of six weeks.

GREEN CROPS. PLOUGHING WITH COWS.

Extracts from Mr. Valcourt's Criticism on Mr. Blacker's Essay on Green Crops and Stall Feeding thereon (which has been translated into French.)

From the London Farmers' Magazine.

In the essay I have just read with much interest, I find Mr. Blacker has touched the target at the circumference, but not at the centre, point blank; he has only glanced at half the advantages to be derived by the small Irish farmer from the house-feeding of cows. The milk is an advantage; the dung is still greater; but the third—which Mr. Blacker has not mentioned—is the labor, though moderate, which the cow performs when harnessed with a collar—not with a yoke; for two cows, harnessed either abreast or one before the other, will draw his horse-hoe, his harrow, his roller, or dung-cart. A cottier who has only four, or even three acres, will have plenty of fodder for two cows *in the stable* to do his tillage, and draw his manure, his crop, and his firing. Mr. Blacker will see, in the east and south of France, cows thus harnessed. In the south they are all yoked; but in the east and in my province of Lorraine they have only a collar, which answers much better. It is true that a cow which works constantly eight or nine hours a day, stops giving milk; but, provided she works only from two to four hours a day, and that not every day, and that she is well fed, she will give almost as much milk as if she did not work at all, and she will give more milk after having a day's rest: and a cottier who has only four acres will not have occasion to employ two cows daily. When a pony rests, it does not bring any thing in; whereas, when a cow rests, its milk increases. It has been observed in Lorraine, that cows are more active than oxen; and that, harnessed with collars, they walk as quick as horses. The cottier, when he sees *the work* two young cows can do when kept well in the stable *all* the year round, will take care to provide plenty of good nourishment for them both winter and summer; for, when poorly fed, they neither can work *well* nor give plenty of *milk* or *manure;* and a cow, with a suitable saddle, can carry considerable weight—for their legs are short and thick, and their spines strong. But, to feed cows well, the cottier must, as soon as he has a yard of ground vacant, dig it, manure it, and transplant on it (summer or winter) cabbages or other plants, according to the season; and, at the same time, as much care must be taken of the dunghill as of the cow—for manure is the foundation of all productive agriculture in Europe. For this reason the cottier's wife should let nothing be lost which can increase the dunghill. The children of the cottier, so soon as they can walk, should be accustomed to carry something to the dunghill; it would be an occupation for them; and they should be praised, and told—"You have worked well; here, my child, is the best potato for you, because you brought enough to bring up four potatoes." And let every child have its own bit of garden. L. VALCOURT.

Paris, Rue Louis-le-Grand, No. 16,
August, 1840.

THE WIRE WORM. BENEFIT OF TRAMPLING WHEAT.

In October, 1836, finding that the wire worm was very fast destroying the wheat plant, and it being drilled, I had it trodden by men, one man treading two ranks at a time firmly into the ground; the expense was 2*s.* 4*d.* per acre, and it was quite effectual in stopping the ravages of the wire worm. A week or two after, the wheat in an adjoining field began to show the ravages of the wire worm, and I pursued the same plan with similar success. In February 1839, the wheat in a piece of down land which had been sown late in October, was becoming thinner very fast, the ground being in a very hollow state after the frost, the young backward plant appeared to be losing its hold and dying away; I then sent a number of women to tread it, and I never saw a piece of wheat improve faster than it did after the treading; I had not only a very good crop of corn for the season, but also more straw than in any other piece in my occupation. In the spring of 1840, finding the wheat in the down land losing plant again, in consequence of the cold weather, I tried the same plan, and there was a speedy change for the better in the appearance of the wheat afterwards; the plant continued to flourish, and at present I have a good crop of wheat on land on which I never saw a good crop before. The remarks I have made apply to hill land, although I have no doubt that the spring treading would be found highly beneficial in all soils, when, in consequence of frost or long continued dry weather, the land is in a light pulverized state."—*From the annual report of the South Wilts and Warminster Farmers' Club.*

THE SCOUR IN CALVES, &C.

From the London Farmers' Magazine.

Observing in this month's number a query, whether any cure can be found for the scour in calves, I may observe that about a year ago I had a valuable calf taken with it, and tried the remedies mentioned by your correspondent—caticu, laudanum, &c. as I had often done before, but this time without success. In a few days it died. Some weeks after, another, for which I had given six guineas, was taken with the same complaint, and by the advice of an eminent veterinary surgeon who was visiting me, I gave it nothing but small and repeated doses of Epsom and Glauber salts in equal quantities; half an ounce of the two in a little warm water, repeated two or three times a day, according to the violence of

the distemper. It was quickly cured, and I have used it on every occasion since with unvarying success. I am glad of this opportunity of making it public for the benefit of my fellow countrymen who are engaged in breeding cattle. I no longer feel any alarm at a calf being affected with this disease, which almost every weaning calf is, within the first six weeks. I consider the complaint in some degree infectious, and also that too warm a building without sufficient circulation of air tends greatly to produce it. Laudanum, bark, &c., though they stop the disease, frequently kill the patient; the salts, on the contrary, remove the cause of disease without producing costiveness. If any of your readers give it a trial, I doubt not that they will find it as useful a remedy as I have done myself. Respectfully, IA.

As I am writing I may observe, in answer to another correspondent, that the white carrot is considered better than the red for milch cows, because not so liable to give any taste to the milk. I should doubt if it were as good for feeding; in product it is generally about double per acre. The seed may be had of any seedsman, who, if he does not keep it, can procure it in London.

ON THE AGRICULTURE OF THE NETHERLANDS.

By the Rev. W. L. Rham, A. M. Vicar of Winkfield, Berks.

From the Journal of the Royal Agricultural Society of England.

Having been requested by the president and the journal committee to communicate the result of my observations on the present state of agriculture in the Netherlands, I shall endeavor to comprise, in a short essay, those peculiar modes of cultivation which have made that portion of the continent of Europe so superior to the surrounding countries in an agricultural point of view, and which throw considerable light on the true principles of practical husbandry. Some of the details have been laid before the public in the "*Farmer's Series of the Library of Useful Knowledge*," under the title of *Outlines of Flemish Husbandry*," I shall take the liberty of quoting largely from this little work, which, having been written on the spot, and referring to particular farms, of which the names are given, may be relied upon as giving a correct account of the modes of cultivation, and of the details of the practice generally adopted.

The climate of the Netherlands, from the borders of France to the northern part of Holland, along the coast of the North Sea, and for 50 or 60 miles inland, differs little from that of Kent or Essex, in England. From its geographical position, forming a part of the continent of Europe, it is warmer in summer and colder in winter than the central part of England. The quantity of rain which falls there is not so great, especially in winter, as in those parts of England which lie on the opposite coast; but the snow covers the ground for a much longer time. This causes a material difference in the time of ploughing the land and sowing the seed in spring.

The quality of the soil is various. Towards the northern part of Flanders and Antwerp, and the southern part of Holland, it is a poor loose sand, almost as barren as that which is found on the sea-shore blown into hillocks and only kept together by the roots of the sea-bent (*arundo arenaria.*) If it were not for a small portion of mud occasionally mixed with this soil, the water would freely percolate through it, and no vegetation could be supported. In proportion to the quantity of the mud, which is a very fine clay with a portion of decayed shells and organic matter, the soil is more or less fertile; and when the mud enters into it in a considerable proportion, it forms a rich compact loam. In many places there are alternate narrow strata of sand and loam, which, being mixed together, form a very productive soil. A small portion of carbonate of lime, produced from the decomposition of sea-shells, is found in the mud, when it is analyzed; but there is no limestone, chalk, or marl, in any portion of this coast.

When the sand is of considerable depth, and little or no loam is found near the surface, it becomes a difficult and tedious process to bring it into a state of productive cultivation. The sandy heaths which lie between Antwerp and the Maese are of the most unpromising kind; and with all the industry of the Flemings and Dutch, a great portion is still in a state of nature, producing nothing but scanty tufts of heath, interspersed with a few very coarse grasses. But even in these barren sands there are many green spots, which have been forced into cultivation. The following passage in the "Outlines" is a faithful representation of such improvements:—

"The poor sandy heaths, which have been converted into productive farms, evince the indefatigable industry and perseverance of the Flemings. They seem to want nothing but a space to work upon; whatever be the quality or texture of the soil, in time they will make it produce something. The sand in the Campine can be compared to nothing but the sands on the sea-shore, which they probably were originally. It is highly interesting to follow step by step the progress of improvement. Here you see a cottage and rude cow-shed erected on a spot of the most unpromising aspect. The loose white sand blown into irregular mounds is only kept together by the roots of the heath; a small spot only is levelled and surrounded by a ditch; part of this is covered with young broom, part is planted with potatoes, and perhaps a small patch of diminutive clover may show itself; but there is a heap of dung and compost forming. The urine of the cow is collected in a small tank, or perhaps in a cask sunk in the earth; and this is the nucleus from which, in a few years, a little farm will spread around.

"In another spot more extensive improvements are going on; a wealthy proprietor or lessee is trenching and levelling the surface, sowing broom-seed, and planting young fir-trees, which are to be cut down in a few years. In another, the process has gone on further: the firs or the broom are already cut down; a vein of loam has been found, and is dug out to be spread over the sandy surface; the cart with liquid manure is preparing the surface for the reception of seed, or the same, diluted with water, is poured over the young blade, just appearing above ground. The soil is created, and, if the cost and labor were reckoned, is paid for at a dear rate: but perseverance ensures

success, and there are few instances of improvements being abandoned after they are fairly begun, unless they were undertaken on too large a scale; but then the land is soon divided into smaller portions, and improvements go on from different centres, and with more certainty."—pp. 11, 12.

Trenching and levelling the surface is always the first operation in bringing a barren soil into cultivation. The Flemings and Dutch are very expert in this operation.

"The instrument they use is a light wooden trenching-spade, the end of the blade only being shod with iron; the handle of this spade is about 2 feet long, the blade from 12 to 15 inches. A light pick-axe is used to break the pan where it appears. A ditch is dug with the trenching spade 2 or 3 feet wide, and as deep as the trenching is intended, generally 2 feet, or at least 20 inches; this ditch is filled with the earth which is taken in long thin slices from the edge of the solid side of the ditch. Every slice is distributed carefully, so as to mix the whole, and keep the best soil at top, and likewise to fill up hollows and level eminences. If there is more than can conveniently be spread level, little heaps are made of the superfluous earth, which are afterwards carried in an ingenious manner, to fill up more distant hollows, by means of horses and an instrument which is called a *mollebart*. Wherever there is a pan it is carefully broken, and the loam, which is always found under it, is mixed with the sand dug out. Draining is seldom required here, except that which is effected by making deep ditches to carry off the superfluous rain-water, which, in a country almost as level as a lake is no great difficulty.

"If there is no manure at hand, the only thing that can be sown on poor sand, at first, is broom; this grows in the most barren soils; in three years it is fit to cut, and produces some return in fagots for the bakers and brickmakers. The leaves which have fallen have somewhat enriched the soil, and the fibres of the roots have given a certain degree of compactness. It may now be ploughed and sown with buck-wheat, or even with rye without manure. By the time this is reaped, some manure may have been collected, and a regular course of cropping may begin. As soon as clover and potatoes enable the farmer to keep cows and make manure, the improvement goes on rapidly; in a few years the soil undergoes a complete change; it becomes mellow and retentive of moisture, and enriched by the vegetable matter afforded by the decomposition of the roots of clover and other plants.

"If about 20 small cart-loads of dung can be brought on each acre of the newly trenched ground, the progress is much more rapid. Potatoes are then the first crop, and generally give a good return. The same quantity of dung is required for the next crop which is rye, in which clover is sown in the succeeding spring; and a small portion is sown with carrots, of which they have a white sort, which is very productive and large in good ground, and which even in this poor soil, gives a tolerable supply of food to the cows in winter. Should the clover fail, which sometimes happens, the ground is ploughed in spring, and sown with oats and clover again. But if the clover comes up well amongst the rye stubble, it is cut twice, after having been dressed with Dutch ashes early in spring. It is mostly consumed in the green state. The clover-lay is manured with 10 cart-loads of dung to the acre, and rye sown again, but not clover. After the rye comes buck-wheat without any manure; then potatoes again, manured as at first, and the same rotation of crops follows. It is found that the poor land gradually improves at each rotation from the quantity of dung used.

"For want of sufficient manure, broom-seed is sometimes sown with the rye after the clover. The rye is reaped, and the broom continues in the ground two years longer. It is then cut for fuel. The green tops are sometimes used for litter for the cows, and thus converted into manure. It is also occasionally ploughed in when young and green, to enrich the land. Oats, clover, and broom, are occasionally sown together. The oats are reaped the first year, the clover and young broom-tops the next, and the broom cut in the third. This is a curious practice, and its advantage appears rather problematical. All these various methods of bringing poor sands into cultivation show that no device is omitted which ingenuity can suggest to supply the want of manure.

"After the land has been gradually brought into a good state, and is cultivated in a regular manner, there appears much less difference between the soils which have been originally good and those which have been made so by labor and industry. At least the crops in both appear more nearly alike at harvest than is the case in soils of different qualities in other countries. This is a great proof of the excellency of the Flemish system; for it shows that the land is in a constant state of improvement, and that the deficiency of the soil is compensated by greater attention to tillage and manuring, especially the latter. The maxim of the Flemish farmer is, that, 'without manure there is no corn; without cattle there is no manure; and without green crops and roots cattle cannot be kept.' Every farmer calculates how much manure he requires for his land every year. If it can be bought at a reasonable rate, he never grudges the outlay. If it cannot be purchased, it must be made on the farm. A portion of land must be devoted to feed stock, which will make sufficient manure for the remainder; for he thinks it better to keep half the farm only in productive crops well manured, than double the amount of acres sown on badly prepared land. Hence also he does not reckon what the value would be of the food given to the cattle if sold in the market, but how much labor it costs him to raise it, and what will be the increase of his crops from the manure collected. The land is never allowed to be idle so long as the season will permit any thing to grow. If it is not stirred by the plough and harrows to clear it of weeds, some useful crop or other is growing in it. Hence the practice of sowing different seeds amongst growing crops, such as clover and carrots, amongst corn or flax; and those which grow rapidly between the reaping of one crop and the sowing of another, such as spurrey or turnips, immediately after the rye is cut, to be taken off before wheat-sowing. These crops seem sometimes scarcely worth the labor of ploughing and sowing; but the ploughing is useful to the next crop, so that the seed and sowing are the only expense; and

while a useful crop is growing, weeds are kept down."—pp. 12, 13, 14.

The process here described is the only one, which, allowing for difference of soil and other circumstances, can bring very poor land into a state of profitable cultivation. In the neighborhood of Aberdeen, in Scotland, on a very different, but still very poor soil, deep trenching with the spade, and judiciously mixing the different earths which are dispersed through the soil, have been found the most efficacious, and, in the end, the cheapest mode of transforming large tracts of peaty moor, full of granite rocks and stones of all sizes, into cultivated fields. The change produced in the aspect of the country is no less striking here, after a few years, than that of the improved heaths of the provinces of Antwerp and Guelderland.

The most rapid improver of loose sands is rich liquid manure, affording immediate nourishment to plants, which otherwise, for want of moisture, would languish, even with an abundance of solid dung; for this last remains altogether inert, until it be moistened and partly dissolved. When the fibres of the root spread, they bind the loose sand, and prevent the too rapid evaporation and percolation of the moisture. These roots remain in the soil when the crop is reaped, and by their decay afford organic matter for the nourishment of the next crop. Hence it is evident that the plants which have long spreading roots, if they can be made to vegetate vigorously by an ample supply of liquid manure, greatly improve very light sands, and, in process of time, by the decay of the vegetable fibres, produce such an increase of humus as entirely to change the quality of the soil.

The collection and preparation of liquid manure is an object of primary importance with the Flemish farmer: every farm has, near or under the stables and cow-houses, one or more capacious tanks, into which the urine of the animals and the washings of the stables flow; and every exertion is made to increase the quantity and improve the quality of the tank liquor.

"The tanks are generally sunk below the level of the ground, and have the sides built of brick, and the bottom paved: they are of various dimensions, according to the number of cows and horses on the farm. Attached to the distilleries, where many beasts are constantly kept to consume the refuse wash, there are very large urine-tanks, of an oblong shape, divided by partitions into different chambers, so that the liquor may be of the proper age when it is used, which some farmers think ought to be six months.* Each chamber is about 8 feet square and 6 or 8 feet deep: these are sometimes vaulted over, but frequently only covered with loose boards. As urine and the emptyings of privies are sold wholesale and retail, there are many large tanks near the rivers and canals, were the dealers have sometimes great quantities in store. Some of these consist of many square pits like tan-pits, bricked round, and the inside covered with a cement, which prevents loss by filtration. There is generally in a corner of each pit a graduated scale, by which the number of barrels or tons of liquid in the tank may be ascertained, by observing the height of the surface. These tanks are gradually filled by boat-loads brought from the large towns; and when the season arrives for sowing, in spring and autumn, the farmers come with their carts and tubs, and purchase as much as they may want. The price varies from three to five francs (2*s.* 6*d.* to 4*s.*,) per hogshead, according to the quality. In a small farm of 30 to 40 acres the tank is generally about 20 feet long, 12 wide, and 6 deep, with a partition in the middle, and arched over, leaving a small round opening for the pump, and another sufficient to allow a man to go in to empty out the earthy deposite which accumulates at the bottom. A trap door shuts over this last aperture to prevent accidents. Sometimes the tank is round like a well, with a dome top and so deep in the ground, that it has a foot or two of earth over it. The situation of the tank is either in the farm-yard near the entrance of the cow-house, or immediately behind it: sometimes it is like a cellar under the building; but this is apt to cause a disagreeable smell in the cow-house. We here describe those tanks which we consider the most convenient: the form and capacity of them vary greatly, according to the means and notions of the proprietors of the farms; but a tank of some kind or other is considered as indispensable an appendage to a farm as a barn or a cow-house. The farmer would as soon think of dispensing with his plough as with his tank: and no expense or trouble is spared to keep it well supplied.

"The numerous towns and villages in Flanders afford great help in the way of manure. The thrifty housewife and her active substitute the maid know the value of what in our households is thrown away, or wasted and lost. A small tank, or a tub sunk in the ground, in some corner, contains all the liquid which can in any way be useful; soap-suds, washings of dishes, &c., are carefully kept in this reservoir until, once a week, the farmer or contractor calls with his tub on a cart; and this, mixed with the contents of privies, which are frequently emptied, he keeps in large cisterns for use or sale.

"But this supply is not always adequate to the wants of the farmer; and then he has recourse to rape-cakes dissolved in water, or in the tank liquor, which is expensive, and can only be profitable when flax bears a good price, this being the crop for which rape-cakes are chiefly used as manure. Every means, therefore, of augmenting the supply of urine is had recourse to, and the most efficacious is the establishment of distilleries. These answer the double purpose of consuming produce and increasing manure by the number of beasts which are fattened on the refuse wash. It is calculated that every beast produces at the rate of 10 or 12 tons of dung and 26 hogsheads of urine in the year. A moderate distillery has 50 or 60 head of cattle constantly stalled. Here then is a supply of manure for several hundred acres of land every year. Formerly there were a great many distilleries in Flanders, but the duty on spirits and the interference of the government has much reduced their number; so that the farmers complain of the loss of this manure, and the consequent deficiency of their crops.

"Liquid manure is carried to the fields in common water-carts, which consist of two wheels

* But this depends on the season of the year and other circumstances, as will be seen below.

and shafts, carrying a cask containing from 60 to 120 gallons of liquid. The cask has in the under part a hole, 2 or 3 inches in diameter, secured inside by a valve; under this is a board a little slanting, to spread the liquid as it flows out of the cask. A man usually rides on the horse which draws the cart, and holds in his hand a string, which passes through a hole in the cask and opens the valve when required. There is an advantage in riding on the horse, as it does not add to the weight of the load on the wheels, which in light soils would be apt to sink deep. In momentary exertion it assists the horse by the weight on his back; and the heavy Flanders horses are well able to carry a man and draw a light load at the same time. When the cask is empty the horse trots home for another load, and no time it lost. It is astonishing what advantage there is in accustoming horses to trot when they have no load; it actually fatigues them less than the continued sleepy walk. Who would suppose that the Flemish and Dutch farmers surpassed us in activity? but whoever has been in the Netherlands in hay-time or harvest must acknowledge it."—pp. 21, 22, 24.

The value of cows' urine with other animal substances dissolved in it is universally admitted by all the farmers of sandy soils in the Netherlands: the theory of its preparation and application to the soil remains, however, yet involved in some degree of obscurity; and some eminent chemists have doubted whether the collection of it in a tank is the most economical mode of preparing it for the soil.

In the fourth number of this journal there is a translation of a very valuable Treatise on Animal Manures, by Sprengel, in which (p. 474) it is more than insinuated, that the advantages of the urine-tank are much over-rated; and that it is better to mix the solid and liquid parts of dung together, and form them into composts with rich earth, as is often done in England and other countries, than to preserve the fluid portion by itself in a tank, to be used separately on the land after it has gone through a certain stage of decomposition. Without disputing the correctness of the chemical principles on which this opinion is founded, we may hesitate before we condemn or undervalue a practice which has produced such wonderful effects in the improvement of the poor sands in the Netherlands.

Liquid manure may be applied to plants in every stage of their growth, if it be judiciously diluted, so as not to injure the young and delicate roots by its caustic nature. It invigorates their growth more than we could anticipate from a knowledge of its solid component parts. It is no doubt sooner exhausted; because it is rapidly absorbed by the roots, and its elements enter into new combinations. If some of the more volatile parts, as ammonia, fly off in the process of decomposition which goes on in the tank, it is probable that a much greater portion of these elements fly off from the solid dung, while it remains in the ground and before it is in a fit state to be taken up by the roots, which can only happen when rain renders it liquid. All those who have had long experience of the good effects of liquid manure on light soils persevere in its use, whatever objections may be urged theoretically to its being preserved separately.

On stiff, impervious soils the use of liquid manure may not be so advantageous, and the reasonings of chemists may be correct. On these soils it is seldom used, except when they are in grass, or when cabbages are planted; and composts prepared with straw, earth, and dung, with the liquid portions occasionally poured over them, are found to be a more effectual and lasting manure. The Swiss, whose principal object is to have a supply of food for their cattle in winter, when the mountain pastures are covered with snow, and who devote much of their attention to the cultivation of roots and artificial grasses, use the liquid manure in a very condensed state, collecting the water which has been poured over their heaps of dung, after it has filtered through them and been saturated with all the soluble portions of the dung. This, which they call *lizier*, in French, and *mistwasser*, or *gulle*, in German, is carried on the land immediately after the grass, sainfoin, or lucerne has been mown, and produces a second and third crop in a very short time. Cabbages, potatoes and the varieties of the beet are invigorated in the same manner; and thus, in the short summers of the high mountain valleys, crops are brought to maturity, which, without the use of liquid manure, would never have had time to ripen. But let it not be imagined that either the Flemings or the Swiss undervalue the solid manure which is produced by the mixture of litter with the dung of animals, collected in heaps, where it heats and decomposes. They are as careful of this, and as anxious to increase it, by every means in their power, as the best English farmer can be.

"In order to increase as much as possible the quantity of solid manure, there is in most farms a place for the general reception of every kind of vegetable matter which can be collected; this is a shallow excavation, of a square or oblong form, of which the bottom has a gentle slope towards one end. It is generally lined on three sides with a wall of brick, to keep the earth from falling in; and this wall sometimes rises a foot or more above the level of the ground. In this pit are collected parings of grass sods from the sides of roads and ditches, weeds taken out of the fields or canals, and every kind of refuse from the gardens: all this is occasionally moistened with the washings of the stables, or any other rich liquid; a small portion of dung and urine is added if necessary, and when it has been accumulating for some time it is taken out, a portion of lime is added, and the whole is well mixed together; thus it forms the beginning of a heap, which rises gradually, and in due time gives a very good supply of rich vegetable mould or compost, well adapted to every purpose to which manure is applied."—p. 22.

It will be seen hereafter that, in the preparation of the land for the different crops, the Flemings and Dutch do not use less solid manure than we do, and that the liquid is an additional means of producing a certain and abundant crop, and not merely a substitute for the dung heap.

The great secret in the improvement of poor land is to increase its fertility by judiciously stirring, pulverizing, and mixing together the different earths of which it may be composed; adding those which are deficient—where it can be done without too great expense of labor or capital—and, above all, impregnating it throughout with

portions of humus, that is, organic matter in a state of decomposition.

The mechanical texture of the soil is of the first importance; for on this depends the proper retention of moisture, without superabundance or stagnation, which implies that the subsoil is naturally porous, or made so artificially; especially in northern climates, where the evaporation is slow, and much rain falls throughout the year.

The roots of plants, in their tender state, must find pores in which they can shoot and increase in bulk, for which the air and water are indispensable. They must also find substances which can yield them carbon, in a soluble state, as carbonic acid, which is produced in all vegetable fermentation. In water and air are contained all the other elements of vegetables, and even carbon in a small proportion. If the pores are so large as to let the moisture through, or allow it to evaporate readily, the vegetation ceases, and the plant soon dies: if they are filled with water, so as to exclude air, the same result follows. Hence it is evident that by altering the mechanical texture of a soil, without any chemical change in its component parts, it may be made much more capable of supporting vegetation than it was before. The quantity of organic matter, or humus, which will sustain vegetable life is extremely small, when other circumstances are favorable. Hence in the improvement of barren soils the most essential process is to alter the mechanical texture. In clays this is effected by repeated tillage, when the situation allows the superfluous moisture to run off. This is the reason why good clays are in all countries looked upon as the best soils, and sands as comparatively inferior. A soil which contains but little argillaceous or calcareous earth in its composition was long considered as irreclaimably barren: but when the alternative presents itself of starving, or making poor sands productive, means are soon found to correct their barrenness.

As pure silicious sand is too porous, the first thing is to add substances which will readily fill up some of the pores. Fine clay diffused through water does so most effectually; and it is astonishing how small a portion of pure alumina will consolidate a loose sand, and convert it into a good loam, the parts of which, when moistened, will adhere and form a clod in drying. Whenever this is the case, the soil can no longer be considered as barren; but it may not yet be fertile, however its porosity may be corrected; for this purpose it requires organic matter already so far decomposed as to be readily assimilated to the substance of the plants. When vegetation is active, and the organs of plants vigorous, there is every reason to suppose that water is decomposed by the action of the leaves; but this does not take place in the infancy of the plant. The roots must find some nourishment, ready prepared and easily assimilated. This has a strict analogy with animal life. The infant finds its earliest nourishment in its mother's milk, or, by the admirable contrivance of nature, in some similar substance. The body of a young chicken is formed from the white of the egg in which it was enclosed; and the yolk is a provision for the period which intervenes between its being hatched and the time when its little bill is so hardened as to enable it to peck and take up insects or small seed. The seed committed to the ground may be compared to an egg: the first expansion of the embryo is entirely from the substance of the seed; and, until the seed-leaves are fully formed, it takes little or nothing from the soil, except pure water. But after the real leaves expand, it requires more nourishment, and if this is not found in the pores of the soil, or if the roots cannot penetrate to it, the plant languishes and dies. It is of no use that plenty of rich manure is somewhere in the soil, if it be not accessible or not in a proper state to be absorbed by the tender fibres of the roots. The plant will die, as an animal would by the side of a chest full of provisions, which are locked up, or unfit for his organs of digestion. These principles lead naturally to the best practice in improving or cultivating the soil; and we shall find that the mode pursued by the Flemings admirably accords with the theory.

The trenching and mixing prepares the soil for receiving the additions of organic matter. The roots are fed with a liquid manure readily taken up, and greatly invigorating, until a sufficient portion of humus is formed, which gives the most gradual and regular supply of nourishment. At the same time solid particles are deposited which fill some of the pores, and begin that accumulation of humus which in time will convert the whole into a rich and fertile soil.

It must be observed, that the smaller the particles of sand the better the soil will be after being improved. Coarse sand, each particle of which is a visible crystal, allows the humus to be readily washed out. It must be mixed with clay or marl to fill up some of its pores; and if this is not already done by nature, it must be done by art, or all the labor bestowed on the cultivation, and all the manure expended, will never be repaid by the produce. It is, therefore, of the greatest consequence to all improvers of barren lands to know, not only what proportion of silicious and argillaceous earths there is in the soil, but also what is the actual size of the particles. This is very easily ascertained by means of the simple instrument, consisting of metallic sieves, which is described in the *Essay on the Analsis of Soils*, in the first number of this Journal. When a considerable proportion of the dry pulverized earth passes through the finest sieve, it is a sure sign that the soil, if not already fertile, can be easily made so. That which is most readily improved consists of a small portion of coarse sand, mixed with a large portion of finer, and with a considerable portion of impalpable earth, partly silicious and partly agillaceous and calcareous, so that, when it is moistened, it does not form a tough paste, but dries into clods easily pulverized between the fingers. The degree of fertility will depend altogether on the quantity of humus which is incorporated with this loam, and which the specific gravity readily discovers; the richer soils being the lightest; for humus is much lighter than any of the simple earths.

Keeping this in view, it is easy to show the advantage or disadvantage of different modes of proceeding, which should vary with the nature of the original soil. In the natural earth, which has never been cultivated, or which is dug up from a considerable depth below the surface, portions of different kinds of earth are found in thin layers or in separate pieces, which, being pulverized and mixed together, want nothing but the addition of

humus to make them a fertile soil. Here the use of the trenching-spade is evident. No other instrument could so well divide the earths, and mix them in due proportions. The more the ground is stirred, the better it becomes; and by a course of cultivation, which, instead of exhausting the humus gradually increases its quantity, it becomes at last a rich mould, like that of a garden, in which all plants suited to the climate thrive luxuriantly. In the progress to this state of fertility the soil must have passed through every intermediate state; and the same process which at any one period effected the improvement must be judicious, if applied to any soil similar in its nature. In agriculture, as well as in most arts and sciences, to stand still is the prelude to going back. The soil, under the hands of a skilful agriculturist must not only be made to produce all that it is capable of producing, but its capacity for production must be continually increasing, until it arrives at that state, when a further increase of humus would loosen its texture too much to produce many of the most valuable plants, which are the chief objects of cultivation; for, beyond a certain proportion, the increase of humus does not always increase the produce.

These preliminary observations appear necessary to enable those who may not have paid much attention to the theory of vegetation to trace their accordance with the practice which experience and observation alone have suggested and confirmed. They may also be useful in suggesting to those who would imitate any particular system of husbandry the modifications which are necessary, where the soil, climate, and other circumstances are different.

The advantages of stirring the soil to a considerable depth by trenching and deep ploughing, which only now begin to be generally appreciated in England, and the intimate union of the manure with every portion of the soil, have long been practically acknowledged by the farmers in the Netherlands. The quality and value of flax, of all their crops the most profitable, has been found by experience to depend chiefly on the care with which the soil is loosened, and the manure intimately incorporated with it. Great attention is paid to ploughing and cross ploughing. The harrows are used much more frequently than with us, and the surface is laid level and thoroughly pulverized to receive the seed. The stitches, where there are any, are not generally in a convex form, but have a flat surface; and the spade deepens the intervals to twice the depth of a common furrow. The earth dug out is spread evenly over the seed which has been previously sown, and is pulverized by the harrows or by a flat instrument called a *traineau*, which is drawn over it, and breaks all the clods, while it compresses and levels the surface.

The rounded form of the stitches in England throws the water into the interfurrows, but at the same time tends to soak the lower portions on each side in wet, if the subsoil is at all retentive of moisture; hence the plants which grow there are often sickly and unproductive. In Flanders, even in the most tenacious soils, this rounded form is unnecessary; for there is an open drain between every two stitches. The soil, having been well pulverized, allows the superfluous water to sink, and it runs slowly into the deepened furrows without injuring the plants at the edge of the stitch. When the crop is reaped, the edges of the stitch are broken down and drawn into the deepened furrow by means of a large hoe or hack, and the plough completes the filling up and lays the land level again. When next the stitches are made, care is taken that the intervals are a foot to one side or other of the lines where they were before, and again dug out eight or nine inches below the bottom of the furrows. Thus in a few years the whole field will have been dug 16 or 18 inches deep, and the soil and subsoil, to that depth, completely incorporated and enriched with manure; for, after the seed is sown, the tank liquor is invariably poured over the surface, or into the intervals before they are deepened, that it may soak in and mix with the earth which is about to be spread over the seed. Although this is a longer process than that of trenching the whole ground with the spade at once, it is much more effectual and less expensive. About an inch only of the subsoil, whatever be its nature—if it be not an indurated clay or gault, as it is in many places in England, but nowhere in the Netherlands—is put on the surface to cover the seed. It produces no weeds, and being soaked with liquid manure, and exposed to the action of the atmosphere for many months, it is mellowed and assimilated to the soil before it is ploughed in. An inch of earth thus improved every year, and mixed with the soil, soon renders the whole of a uniform quality to the depth of 16 or 18 inches; after which every subsequent spreading tends to increase the uniformity in texture and richness.

Some plants do not require a great depth of soil, their roots spreading near the surface. In this case the manure is ploughed in with a shallow furrow, and none of it is buried below the reach of the roots. But the most profitable crops, such as clover, wheat, cole, and especially flax, thrive best in a deep soil: the roots of this last will strike down several feet into the ground, if it meets with a very mellow soil; and the crop will not only be more abundant, but of a better quality, than it would in a soil, however rich, which had but little depth. Potatoes also, which are cultivated to a considerable extent in every farm, thrive better in a deep soil of moderate quality, than they do in a richer soil of small depth on a barren subsoil.

Another mode of deepening the soil and mellowing it at the same time is worthy of notice. When the harvest is over, the land is immediately ploughed, and, where laborers are to be found in sufficient numbers, several are stationed, with spades in their hands, at regular distances along the line of ploughing. The plough makes a furrow about 10 inches wide and six deep. As soon as it has passed the first man, he begins to take solid splits of earth out of the bottom of the furrow and places them on the land to the right side. These spits are not taken in continuation, but with a small interval between them, leaving so many square holes. The number of laborers is proportioned to the length of the furrow, so that each shall have finished his portion by the time the next furrow is made, which fills up the holes in the preceding furrow; and the whole field is laid in an extremely rough state; thus it remains for a considerable time, sometimes all the winter, and the rain and frost pulverize the clods

which lie all over it. In spring the whole is repeatedly harrowed to make it level, and is then ploughed flat, or in stitches to prepare for sowing, the manuring being a matter of course. This will give some idea of the importance attached to deepening and mixing the soil, and will account for the uniform appearance of the crops on soils of very different qualities. The worst soils require more labor and manure, and consequently are less valuable; but every deficiency is made up by additional industry. But it may be asked, where can a farmer find manure, solid and liquid, to manure nearly all his land every year? for of all the crops cultivated buckwheat is the only one which is sown without some manure, at least by all good farmers. This is the great point to which the attention of the farmer is constantly directed. The collecting and preparing of manure is a profession of itself. The poor in towns sweep the streets and make composts of all refuse matter in some spot given to them for that purpose without the gates. They reduce it to a fine powder, and dry it in the sun. What will chemists say to this? Will not all the volatile parts fly off, and the best portions of the manure be lost? We will not pretend to give an answer to this objection: but the fact is, that this dry manure is most highly prized by the growers of flax, and is supposed more efficacious than any other, night-soil excepted. This last is the *ne plus ultra* of manure for light soils. It is conveyed in boats from the different towns, and deposited in pits, where it is collected and kept for sale by measure. In a very dense population this resource is considerable, and no one would be so wasteful as to allow the common sewers to carry off a substance which is regularly sold and obtains a good price.

These are adventitious resources, and can only be depended on in certain localities. The only certain means of obtaining manure is by feeding cattle, which in the Netherlands are chiefly milch cows. No meadows are required in the light lands of Flanders for the cattle to graze in: and where there are meadows along the banks of the rivers, they are mown to feed the cows with grass in the stalls, or to make hay for winter fodder. The whole system of husbandry is founded on the supply of manure, and a considerable portion of the crops are merely subservient to this purpose. The immediate profit on the cattle is trifling, if they do not even cost more to feed than their produce will repay: but the manure must be had; and he who can procure manure at the least cost is the best farmer. Keeping this in view, all the cattle are kept in stables, that none of the manure may be lost; and every mode of feeding has been tried which will increase the manure at the cheapest rate. Meadows being scarce, and hay dear in those parts of the Netherlands where the soil is sandy, the chief food of cows in summer is grass, barley or oats, cut in a green state, clover, tares, and spurrey; and in winter cabbages, beans, and roots. These last are not given in their natural state, but soaked in warm water, or boiled into a mess, which is given milk-warm to the cows in troughs; so that it may be truly said, that the cows are fed like pigs. The straw is used chiefly as litter for the horses. The cows often lie on smooth bricks, which are washed clean twice a day, for which purpose a pump is an essential appendage to a cow-house. There is generally a deep gutter along the wall behind the cows, into which the water and urine drain, the ground sloping gently towards it. The tank is either immediately under the stable, well vaulted over, or it is so near that all the liquid readily runs into it through a covered drain. The heads of the cows are towards the middle of the stable, and their tails over the gutter along the wall. The width of the building admits of two rows of cows, facing each other, with a space between them sufficiently wide to admit a small cart to bring the food to them. This is universally the form of a cow-house in Holland. The liquid in the tank is allowed to go through the first stages of fermentation, during which the caustic portion of the urine is rendered mild, and the liquor is better adapted to be taken up by the fibres of the roots. In order that there may be a regular succession of liquid, in a proper state for use, there are partitions in the tanks, and, by means of small flood-gates in the drain which leads to it, the fresh accumulation may be directed to any one of the pits thus formed, while the ripe liquor may be pumped up into tubs or barrels set on wheels, to be conveyed to the land. There are means of accelerating or retarding the fermentation, according to the time when the liquor is wanted. Stirring and admitting the air assist the process, while the addition of earth, peat, or ashes, and keeping out the air, retard it. The efficacy of the liquid is much increased by adding oil-cake, the residue of rapeseed when the oil has been pressed out, and other vegetable substances. This is usually done a short time before it is put on the land, as it would otherwise ferment too much.

We have already mentioned the compost-heaps. These are chiefly made of the dung and litter of the horses and pigs, kept moderately moist, and mixed with every kind of refuse vegetable matter, with the addition of mould from ditches and the sods taken from open drains in pastures. This is generally put on the land in an active state of fermentation, and immediately ploughed in; sometimes the small heaps laid out of the carts at regular distances in the field are moistened with liquid manure, to excite a fresh action; and, as soon as they begin to heat, the dung is spread and ploughed in. It would appear from this, that it has been found to decay more rapidly in the earth, when put in hot, than when the fermentation is already subdued, which might be anticipated in the sandy soils.

"BEST TIME FOR CUTTING TIMBER."

For the Farmers' Register.

An article from the New Genesee Farmer, under the above caption, lately republished in the Farmers' Register, contains some valuable suggestions. I believe, with the writer, that the summer is the best time for cutting timber, but not that every part of the summer is equally good. Early in the season the flow of sap is so abundant, that its retention in the pores of the wood during the act of seasoning is liable to produce fermentation, and consequently premature decay.

It is a well known fact, that in the month of

August there is a short time when the circulation is nearly inactive. It is during the interval between the summer and fall growth. The bark no longer runs any more than in winter; and the sap, instead of being thin and watery as in the preceding months, becomes concentrated and viscid. I consider this period as *the* best time of the whole year for cutting timber. It usually occurs from the 15th to the 20th of the month, a few days earlier or later according to circumstances; and continues only for a very short time. Close observation is necessary to ascertain it with exactness. The proper rule is, when the bark ceases to run.

I have frequently had timber cut in August for farming purposes. Such as gate posts and other things much exposed to the action of the weather, and I can testify that there is a compactness and solidity in it when it becomes dried, which I have never observed in wood cut at other seasons. My own experience does not extend farther back than ten or twelve years; but I have known several cases of remarkable durability, when the timber has been cut according to the old Dutch rule, *in the dark of the moon in August*; which is as near the time indicated as any person relying on lunar influences could approximate to it. Every third year it might coincide with it almost exactly.

The period mentioned may also be used by farmers to very great advantage, in destroying a number of pests. The simple belting of a tree will then so effectually destroy life, that not a sprout will afterwards put up from the stump or roots. It is the only time at which I ever even partially succeeded in subduing the shrub called "round cap" (*Cephalanthus*) which greatly infests our meadows and flat grounds; and which usually grows from the smallest portion of root. I had warred against it for years to no effect, until at last, by a single operation in August, I totally eradicated it. The sassafras, elder, locust and other woody plants growing freely from the roots, and the bramble likewise, might no doubt be effectually extirpated with the same facility, and the same period might be selected with equal propriety for shrubbing new grounds.

T. S. P.

ON IRRIGATION.

To the National Institution for the promotion of science.

From the Southern Agriculturist.

Washington, April 2d, 1841.

Since the brief statement of the advantages of irrigation appeared in my discourse delivered before the institution in January last, I have received so many applications for information on the manner of watering land, that I am induced to believe a more extended notice of the subject may be acceptable and useful.*

The numerous and abundant rivers, streams and brooks which traverse our country in every direction, afford great facilities for irrigating the soil, and thousands of acres of barren land might thereby be rendered as productive as any in the United States.

The thin soils, which drain and dry easily, profit most by the use of water, and are the least productive without it. The gravelly, sandy land of Chile produces by irrigation upwards of thirty bushels of wheat to the acre, and the poor lands in the neighborhood of Mexico are made equally productive by this process. The great advantage, however, to be derived from the free use of water is not so much in the increase of grain, as in that of grass crops. A water meadow attached to a farm gives the farmer an abundance of manure for that portion of his land which he keeps in tillage; for he may convert into dung the whole of the hay it produces, while it requires nothing in return but watering.

In the Carolinas and Georgia the low lands bordering on the rivers are irrigated as high up as the influence of the tide extends for the cultivation of rice. The water is admitted into ditches parallel and perpendicular to the river, and thence distributed by feeders over the whole surface so as to drown the land, by opening the sluices when the tide is rising; and after keeping it there as long as is deemed necessary, it is let off at low tide. This method might be practised with great advantage on all the tide-water rivers throughout our country where the banks are low enough to admit the water at high tide. Flat lands that have not the advantage of tide water are the most difficult to irrigate successfully, for it is essential that when the water is let off, the land should be drained perfectly dry; otherwise it will produce coarse grass of inferior quality. Lands that have a gentle slope, even steep hill side, are better adapted for irrigation, as they admit of the water flowing over them without covering the top of the plants, thus giving them the advantage of air and moisture. A gentle current is considered more advantageous than stagnant water, and the land thus situated will always drain dry when the water ceases to flow. On level land it is necessary to conduct the drain so far that it may enter the river low enough to ensure a sufficient fall to dry the land.

Where the stream is rapid and the fall great, it is not necessary to construct any dam; but simply to tap the river high enough up to lead the water along the highest part of the field; but where the current is sluggish the water must be raised by a dam erected at the point where it is to be used.

There are two methods of watering lands. The one by dividing the field into regular beds, and the other by what is called *catch* work, which is resorted to where the form of the ground is irregular. It varies therefore with the circumstances of the land it is proposed to water; but the conductors, feeders and drains must be laid out so as to profit by the natural movements of the soil both to water and to drain it.

The first thing to be done by the farmer who desires to irrigate his fields, is to take an accurate level of the ground he intends to water, so as to compare the highest part of it with the height of the water to be used. The surface of the water

*The discourse referred to above, described a system of practical irrigation, with illustrations, much of the same general character as was given in a former volume of the Farmers' Register, and on a much more extended scale, from the work of Stephens on Draining and Irrigation.—Ed. F. R.

must be eight, twelve or twenty inches higher than that of the land, according to the distance of one, two or three hundred yards from the one to the other. The main conductor is then to be cut from that point as straight as it can be, to lead to and continue along the highest side of the field. If the land has any swells on its surface higher than the rest, it will be necessary to give to each of them its own conductor, with feeders branching from it, to convey the water over that portion of the field. The width of the conductors must depend upon the quantity of water they are required to convey; and be deep enough to receive the muddiest portion of the stream; for although the land will profit by being covered with clear water, it is more enriched by the deposite of turbid streams. Each conductor is to be provided with a sluice to regulate the admission of the water. In case the river does not run in such a direction as to allow the water, after flowing the land, to be discharged directly into it, a main drain must be cut along the lower part of the meadow to receive the surplus water and convey it into the river. This should be of the same dimensions as the principal conductor. The portion of meadow to be watered by each conductor is next to be divided into beds from thirty to fifty feet wide, the feeders, which branch at right angles from the conductor, running along the centre of them, except where the ground falls two ways, when it may be necessary to make the feeders nearer to one drain than the other. A bed two hundred yards long will require a feeder where it leaves the conductor to be twenty inches wide, and gradually diminishing in width to twelve inches at the extremity. A drain is to be made between every two feeders, and parallel to them, of the same dimensions, but reversed form; the upper part being ten or twelve inches, and the drain gradually widening to twenty inches, where it terminates either in the main or in the river. Supposing these works finished and ready to go into operation, the manager opens the sluice to admit the water into the conductor where he adjusts the stops in such a manner as to supply the feeders. He next regulates the stops in the first feeder, so that the water shall flow regularly over its sides from one end to the other. He then repeats this process in the second feeder, and so on until all the feeders are adjusted. The stops may be of pieces of board or of turf pinned down, if necessary, taking care to keep the heads of the pegs below the surface of the water, otherwise they are apt to collect weeds and trash.

The rule in Europe is to flow the land throughout the months of October, November, December and January, letting the water run ten or fifteen days at a time, and keeping the land perfectly dry during the intervals. This can only be done in situations where it is not liable to freeze hard; for a sheet of ice forming over the soil would injure it. In February it is recommended to water in the evening and let the water off early in the morning; this practice is continued through March and April, the water during that period being never kept on the land more than two or three days at a time. From the first week in May the land is left dry until the grass is cut and the hay harvest is over, when it may be watered again for a short time, to secure an abundant after grass, that may be fed off.

The profits arising from irrigation are so great that they will justify a considerable outlay. The works, therefore, ought to be well and durably constructed; the dams and sluices of the best materials, and able to resist the sudden rising of the water. The beds which, as already stated, are to be from thirty to fifty feet wide, should be raised from one foot to fourteen inches in the centre, so that the water will fall gently off from the feeders which run along their summits to the drains.

Where an old and well set meadow is to be watered, it is advisable to lift the turf and level and prepare the subsoil, relaying the turf after the beds are made. This process of lifting the turf and relaying it after ploughing and manuring the subsoil of old grass lands is practised in the best agricultural districts in Europe with great advantage, even when it is not intended to prepare them for irrigation; but only to invigorate the growth of the grasses. If, when the works are completed, the soil is to be ploughed up and levelled, it will require two or three years before it will be sufficiently set in grass to allow its being watered without working.

I have endeavored to give such a description of the process of irrigation as will at least enable a farmer to judge of the practicability of watering any portion of his land, if not to execute the work himself. Those who seek for further information on this important subject, may consult the works of Boswell, Wright, Smith and Johnston, Loudon's Encyclopedia of Agriculture, and Stephens' Practical Irrigator. The construction of works for irrigation belongs, however, to the civil engineer, and it is to be hoped that those of the United States will turn their attention to the subject. Our extensive lines of canals may, for the most part, be converted into conductors, and the water be beneficially used to fructify the country through which they pass. If a blessing awaits the man who makes two blades of grass grow where only one grew before, the irrigator will be thrice blest; for well watered land will produce at least three times as much grass as the same quality of soil under dry culture.

J. R. POINSETT.

SKETCHES OF NORMANDY.

Extract from the Quarterly Journal of Agriculture for June, 1841.

This most interesting portion of France differs extremely from the southern and eastern parts in the general appearance of the country, as well as in the details of its rural economy.

Instead of exhibiting extensive tracts of tillage, without any visible subdivisions to mark out the different ownerships, and without trees, excepting the formally trimmed ones upon the roadside, Normandy is a continued series of well-timbered farms, and beautiful forests of surpassing beauty, interspersed with corn-fields of small extent, orchards, and meadow or grazing land.

The admirer of rural beauty is astonished at the aspect of this vast province, if his eye has been previously familiarized only with the open country in other parts of France, where, though his judgment approves of the economical principle which leads him to lament the absence of hedgerows and trees of every description, he is fatigued with the uniformity of appearance presented to

him, and desires the relief of a varied landscape, such as Normandy exhibits.

The quality of soil varies much, but is on the whole of fine quality,—the richest in France—and in many parts it is highly calcareous.

The farms may be said to average sixteen English acres in extent, and when let they are generally held under leases of nine years certain, and if, at the termination of this period, they should change occupants, agrarian outrages are never the results.

But one-half of the farms is held by the proprietors, who sometimes rent adjoining land; and these proprietors are, in the majority of instances, poor farmers of the lowest class, taking their own produce to market, disposing of it in person, and living as poor as it is possible to imagine.

Many of this class, like the common laborers, dine upon a few apples or pears and a bit of bread without the formality of sitting down to a table, and are content with a drink of their own home-made miserable cider.

It is not easy for an Englishman to conceive how men can work hard upon the washy diet which is so general in France. We have seen men cutting up wood for fuel (which is hard work) from morning to night, and in the severest winter season, without more nutritious food than indifferent fruit and a little bread; the soup taken perhaps for supper at home, or for early breakfast, is, if possible, worse as a means of support, for it consists merely of cabbage and hot water, with a little grease or kitchen stuff; it distends the stomach with wind, and therefore is totally unsuited to a working man, who should have solid, not liquid diet.

The consolidation of farms, and consequent good farming, cannot be anticipated in France; for though an individual here and there may add "field to field," the laws of property render it probable that his farm will be subdivided again in the next generation. These laws, by rendering property divisible *ad infinitum*, and annihilating the privileges of primogeniture, destroy aristocracy in its most essential principles, create a vast number of petty proprietors, with very contracted resources, and—supposing them to let, not cultivate their allotments—take away all chances of having an independent thriving tenantry, under a liberal and encouraging landlord, who identifies his own interests with those of his tenant, and can afford to place him in a really comfortable position.

If our great and munificent land-owners had been encumbered with these restrictions, which gradually reduce ownership, and give rise to the paltry system of higgling for rents, which so much distinguished the class of Squireens in Ireland, and in Scotland too, where would be the splendid improvements and *creations* of valuable property, with all the consequent train of industry and independence to thousands, which have been effected by the individual efforts and accumulated wealth of some of our aristocracy?

The effect of the principle of equal partition of property, so pleasing to the ears of unreflecting people who have had no opportunities of seeing the practical consequences, must ever be an insurmountable bar to the acquisition of perfect skill in the operations of husbandry in France; small farms can never admit of the purchase of expensive implements, nor of speculative improvements, and no parent there has the power of leaving his property in land (he may *divide* his money as he likes, but not by testamentary act,) otherwise than equally among his children, male and female, with the privilege only of giving one-fifth more to a particular child; and this depends on the number of children which he may have.

Where would be the means of building those excellent farm-establishments which we have through the length and breadth of our land, and of draining thousands of acres in a very expensive, but permanent manner, through the combined powers of the proprietor and the tenant, where the means for conducting those expensive operations on the soil, which we constantly witness, if the laws of primogeniture did not prevail among us?

What has been stated applies more generally to France; we must now confine our observations to the circumstances of Normandy.

Though there are many sheep kept in this division of France, we cannot properly assert that it is of a pastoral character; there is little or no free range for sheep, they are kept in very small lots of three, four, or half a dozen, and usually tied together by the legs even when they have lambs, which, though an economical plan as regards the quantity of produce consumed, checks the condition of these animals considerably. Occasionally they have a comparatively free range, but rarely, and altogether a worse description of sheep cannot be imagined.

The introduction of the Leicester breed would be a great boon in Normandy, where there is much rich land, and where the enclosures render this breed more desirable than that of South Downs, or any other breed requiring a good range. The foot-rot is frequent among the Norman sheep, and this would be another circumstance against the breed of South Downs, which are so liable to it.

The average price of mutton is 3½d. per lb. in the markets, and the only kind fit for table is the year old; the purchaser who ventures upon *aged* mutton will generally find that it is extremely tough; frequently, without of course intending it, he finds that he has brought home part of an old ram which he cannot chew nor digest.

The management of cows is not a great deal better, yet the cream and butter, which are prime in quality, and abundant in quantity, even in the midst of winter, when frost and snow pervade the land, put us entirely to shame. Instead of having a few thin slices of well *salted* butter at the breakfast or the tea table, as is so general in this country, through the winter season, the markets of Normandy, as well as those of the more southern parts of France, afford ample supplies of the most delicious fresh butter imaginable, at less than half the London price.

In great farms the practice is to churn twice a-week in summer, and it is much owing to the shortness of interval during which the cream (and this only is put into the churn) is allowed to stand, that the butter is so well flavored. Dairy cows may be said to yield eight quarts of milk daily during two-thirds of the year, and twelve quarts during the remaining four months.

Beet, in some departments, is given pretty freely in winter, but the use of this vegetable for cattle feeding is very partial and limited, for though it

increases the tendency to milk, it is not so favorable to its excellence of quality as grass, if the season will admit of grazing, or sainfoin hay, which many people consider more economical and productive of prime butter than any other food in winter. Nor is this excellence effected by any artificial feeding, unless hay be considered such, for, except very *partially*, beet-root is not cultivated for cattle, and potatoes and turnips are never given to those cows which yield this fine butter.

At a numerously attended meeting of land-proprietors and farmers at Bayeux, M. de Chaumont submitted to them a number of questions respecting dairy management; the following is a digest of the answers returned to some of the inquiries.

The application of dung imparts in *spring-time* valuable qualities to dairy pasturage, but the grasses in summer give, on dunged land, a rank flavor to butter.

Dairy-houses should have a northern aspect even in winter, when they require warmth, as a south wind is prejudicial to milk, and all offensive smells should be avoided. Cream should not be left in the milk-room on account of the influence which the fermenting milk has upon it, and also because the fire, so necessary for the milk in cold weather, is injurious to butter. The floor should be flagged, and washed in summer to preserve coolness. Some are opposed to washing; we should say that the French dairy-maids are all so, for cleanliness is not among their virtues, but for what reason we have not ascertained.

The milk when taken from the cow, is poured into a strainer, by turning it upside down into pails, and care is taken in winter that it cools as little as possible before it is changed from the one vessel to the other, while in summer the object is to let it become cool before it is thus poured out into the pans.

These should be fresh and well scoured, and often put into boiling water for about half an hour, and dried in the sun or at a fire. It is considered that the nature of the milk in earthen vessels has a decided effect on the formation of cream, but as to their shape there does not appear to be any remarkable influence. Cylindrical earthen vessels are preferred, or those shaped like an inverted cone, flattened at the bottom, and of considerable depth. Porcelain has been tried, but not found so good as the common earthen ware.

The cream is skimmed twice a-day generally, sometimes three times, and care is always taken not to leave it too long on the milk. Twenty-four hours (sometimes forty-eight) in summer elapse before the first creaming, and the cream is allowed to lie as short a time as possible before churning.

By day the cows are turned out, and at night they are supplied with hay, often of sainfoin, which is admirable for dairy purposes.

The breed is very varied and nondescript; the Alderney blood seems very common, especially in the part of Normandy adjacent to Brittany; yet the people of this latter province deny that any importation of cows from Alderney, Jersey, or Guernsey to the Main is ever made. The parent stock, however, was indisputably identical.

Lord Morpeth, a fine Durham bull, of which there is a portrait in the Journal of the Association of Normandy, was imported with "Gaudy," a cow of the same breed, to the Hara in 1838.

There is a heavy coarse breed also, admirably suited to the plough and cart, which, if crossed judiciously with the Ayrshire, would produce a breed with the tendency to fatten, which is much wanted in the Norman stock. Stall-feeding is not understood, and it is rarely the case that a carcass of really fat beef is to be seen.

Bullocks are much used. Four or five of these generally accompany three or two horses in the teams, which, though composed of so many individual animals, and, in our judgment, injudiciously yoked, are possibly well adapted to the deep-rutted and precipitous lanes through which they have frequently to pass.

The system of rearing and fattening calves differs much in the departments of the north of France. At Bessin, for instance, all heifer calves are usually reared, and the bulls fattened, for the market, to which they are taken when two months old. In that department they are fed on skim-milk only. At Caumont they are fatted on new milk, because in that district the butter is of inferior quality, and value, and flavor, and even bread, converted into a kind of pap, is sometimes added to the new milk to accelerate the fattening, which is considered sufficiently attained at the age of six weeks. This veal averages 120 lbs. a quarter, and is sold at 3½d. per lb.

The swine is of the worst possible description as to form; but the pork in flavor is very good, and the English, who cure their own bacon and hams, find the meat firm, and in every respect good.

ON THE USE OF LIME AS MANURE. (*a.*)

From the Southern Agriculturist.

Mr. Editor:—It is unfortunately a trait in the character of the southern planter that he regards all novelties with suspicion. Any departure from the practice of his fathers, or his neighborhood, he considers dangerous, and the generality will deride as vain theory, the efforts of the man who will have the courage to make an innovation upon established precedents, or to violate a rule dictated by one of the patriarchs of a neighborhood.

This cautious spirit, if united to a liberal enterprise, is highly commendable; he who possesses it will incur no rash risks, while he will avail himself of all the lights of modern research; but unfortunately we too generally find the caution without the enterprise. The sneer of the practical man withers the energy of the enthusiastic speculator, and the old routine of practice continues to be popular because nothing short of absolute demonstration will convince the man of practice that the theorist is not a madman.

In your editorial career you have suffered from this prevailing spirit. The practical man will not write, because he has nothing new to communicate. His practice is the same now as it was yesterday, and as he thinks it will be to-morrow, and is known to all engaged in the same pursuit. The speculator dare not write, because he knows that the first question which will be asked when his essay shall have been read, will be—What sort of planter is he? How does his practice square with his theory? Is he a practical man? If the answer to this question be not satisfactory,

he will be condemned as one who presumptuously pretends to teach, while he ought yet to be sitting at the feet of Gamaliel. "He writes better than he plants." If a more damnatory specimen of faint praise were ever uttered, I have not had the misfortune to hear it. My imagination can conceive of nothing more killing.

I am surprised that the planters of lower Carolina have as yet derived no benefit from the publication of one of the most valuable and practical essays of the age, (I mean Mr. Ruffin's Essay on Calcareous Manures.) Several years have elapsed since its first publication, and notwithstanding the knowledge that it has revolutionized agriculture in lower Virginia, I believe that hitherto not one planter in South-Carolina has used lime but as a petty and useless experiment.

The book came out, too, at a period when South-Carolina was suffering severely from the emigration of her citizens. Exhausted fields, lying over large beds of lime, were deserted, in some instances they were literally abandoned, and at best they were sold as lands hopelessly worn out, and their proprietors went to the great western valley to seek richer lands, a main feature in the constitution of which was the presence of lime. Notwithstanding the known character of Mr. Ruffin for intelligence and probity; notwithstanding the labored details of experiments which teach the reader that he has got among stubborn facts, and not idle theories; notwithstanding that it is a history of what has been effected in lower Virginia, a territory differing but little in character and climate from our own, yet the book which unfolds its beneficial agency is with us almost unknown; the lime remains in its natural bed undisturbed; its very existence is by many questioned, and the fields lying but a few feet above it, and which with its application can be put in a state of progressive improvement, are undergoing yearly a progressive deterioration.

The extent of the lime-stone [or marl] region in South-Carolina is as yet unknown. There is every reason to believe that it commences immediately below the falls of the great rivers, and continues to the sea. The stratum varies considerably in thickness. I apprehend that its maximum thickness is at or near its termination in the uplands, and that its minimum is at or near the sea coast. It is certainly much thicker at the Eutaw Springs than in the known localities twenty miles below.

The position of the lime is various. At the Eutaw Springs and in its vicinity, in the neighborhood of McCord's Ferry and near Monk's Corner, on Cooper river, it frequently rises to the surface and a little above it. On the elevated lands bordering on the various swamps and creeks which form the head of the latter river, it has been found as low as from ten to twenty feet below the surface. On the margins of creeks, and near the point of junction of upland and swamp land, its depth below the surface is but a few inches, and generally, except where the land rises abruptly to a considerable elevation, it may always be found at the depth of from four to eight feet.

If I might presume to propose a general rule from my limited observation, I would suggest the following as the indication of a bed of lime, viz:—whenever the upland adjacent to a stream of water produces a growth of hickory, red oak, dogwood, locust or walnut, lime may be dug for with a certainty of success; when, on the contrary, the uplands produce only long leaf pines and scrub-oak, the search for lime will be unavailing. The streams of the former class abound in muscle shells and craw-fish, and the uplands in snails; none of them, certainly not the muscle, will be found in the pine land streams.

The appearance of the lime varies in different localities, but the fragments which have been subjected to analysis, exhibit generally about ninety per cent. of alkaline earth,—how large a portion of this is magnesia, is a question not yet settled by the chemists In some places near Santee river, below the Eutaw, and at Godfrey's ferry on the Peedee, the lime is found in a bed of loose shells partially pulverized, and may be carried immediately from the pit to the field, without further preparation. It is generally a hard rock full of fossil-shells; frequently the rock is so hard that when smartly struck with a hammer scintillation will follow. This of course will require either fire or the hammer to render it fit for the field. If a quantity of this hard stone is thrown up in the fall, and exposed throughout the winter months, it undergoes disintegration (*b.*)

I have no correct data for ascertaining the amount of labor necessary for obtaining lime. Mr. Ruffin, who has been in the habit of spreading from three hundred to seven hundred bushels of calcareous earth to the acre, (equal to from one hundred to two hundred and thirty bushels of Carolina lime,) states that a single man, employed throughout the year, will dig enough to manure sixty acres of land. Two years ago, six men in three weeks dug for me eighteen hundred bushels—this was equivalent to the labor of one man for nine weeks or fifty-four days. With this amount of lime I manured eighteen acres of land. I believe that my hundred bushels of lime are fully equal in value to Mr. Ruffin's three hundred bushels of calcareous earth. Now as it required the labor of three days to manure one acre, if we take an average number of two hundred and seventy days as the number of working days in the year, then the labor of one man would at that rate of manuring furnish enough lime to cover ninety acres of land. If the relative values of the Carolina and Virginia manures have been justly stated, we may presume that the value of the products of labor will be greater in Carolina than in Virginia, because it is to be supposed that when the liming is pursued as a systematic part of the operations of the farm, the means employed in procuring it must be more convenient than any I could command, when only engaged in a crude experiment.

Following the practice universally adopted in Carolina, viz:—to devote our attention to the market crops almost exclusively, considering every other as a secondary object, my experiments with lime have been made only on cotton. I have made two experiments; the first in 1839, a year remarkable for dryness and great productiveness; the second in 1840, a year as remarkable for humidity and comparative failure. In each year the result was most gratifying; the most decidedly marked success was in the dry year. After one

year's cultivation the land was suffered to rest. The field limed in 1839 produced a less abundant crop of poverty grass than the circumjacent lands not limed—and a more luxuriant growth of crab and joint grass. The field of 1840 is now at rest.

I am aware that our planters will not consider the improvement of the joint grass a desirable object. That is a grass that is said to delight in a calcareous soil, and it might spread more rapidly on such, than on lands free from calcareous earth. Every one who owns an old plantation, is aware that joint grass is no stranger, even to the poorest lands. If lime then be really a fertilizing agent, let us not object to it because it does not prove a panacea for all the evils with which our ignorance, or our carelessness, or the behests of a wise Providence have strewn our path.

Mr. Ruffin observes, that they who wish to use calcareous manures must make the digging of it a branch of the regular farming operations. Any system of manuring, we know must, to be efficient, become a part of the habitual operations of the plantation. Trusting to the chance of obtaining lime during the season between hoeing and harvesting, I made no other provision for it last year, but classed it with the rest of that miscellaneous jobbing operation called fall work. But in the fall the water had taken possession of my pits, and I had land to clear, and other causes prevented me from obtaining a bushel of lime. The opening of a small body of land, together with the rains of August and September, have stopped for this year my course of experiments. How frequently do we hear the opening of lands alleged in excuse of neglect in many operations essential to good husbandry. It excuses the want of manure, the inefficiency of ditches, the insecurity of fences, the delapilated state of the plantation buildings, and the wants of many comforts, which as enlightened citizens and men of substantial wealth, we should not want.

I am no enemy either in theory or in practice to the clearing of our forests—but I think the time has come when it should be done with great caution. Our upland forests of prime quality are nearly exhausted. They are our only resources in the country for good fuel, an article which in some vicinities has become frightfully scarce. Unless necessity therefore should compel, or strongly advise their destruction, they should I think be husbanded as a resource of wealth and comfort at no distant period. The system pursued by our predecessors was, to clear a piece of land and cultivate it to death. It was then suffered to recover some strength and throw up another growth of trees, while other forest lands were subjected to the same system of exhausting cultivation. In the course of time the new forests were again reduced to cultivation and again exhausted, but in a much shorter period than at first.

A system of resting then followed. After a long period farmers began to apply manure, and now commenced a system that promised really to give to the planter the character of a cultivator of the soil. Now we may look for improvements that shall be permanent, and it is to aid in perfecting this system that I have felt it my duty to contribute my humble efforts, by saying a word or two in favor of lime.

Many a planter who would shrink from the appalling labor of liming his land, will not hesitate, if it is convenient, to clear land, even though it may not be necessary. Let us estimate the labor necessary to prepare for cultivation a field of ten acres, by two methods of clearing, and of liming.

Let us suppose first a piece of prime upland to be cleared, then the labor account will stand as follows:—

1st. Underwooding—to each acre 8 hands, equal to - -	80	days	work.
2d. Felling and cutting up trees, 8 hands, equal to - -	80	"	"
3d. Log rolling, firing, &c.: to each acre 2 hands, - -	20	"	"
4th. Listing: to each acre 8 hands, - - - -	80	"	"
5th. Bedding: to each acre 8 hands, - - - -	80	"	"
	340	"	"

To obtain this field then, requires an expenditure of three hundred and forty days of labor. No account has been taken of the labor of women and children engaged in raking, firing, &c., nor of the labor necessary for ditching, fencing, &c. During the first year of cultivation the usual task of half an acre cannot be performed, and even in the labor of preparation for the second crop, short tasks are necessarily given. This field will endure constant cultivation for five or six years. After that period it will require rest and manure. The first crop, it must be observed, is always an uncertain one. A prudent speculator will never make a large calculation on the issue of a crop sown on fresh lands. Let us now suppose an exhausted field to be brought into cultivation with the aid of lime.

I have already stated that it required the labor of three days to procure lime enough for one acre of land, at the rate of a hundred bushels per acre. Thirty days' labor will then be required to manure ten acres at the same rate. Suppose the quantity doubled and two hundred bushels be applied—here then will be required the labor of sixty days. Add an equal number of days for burning, hauling and spreading, and the lime will be on the ground at the cost of one hundred and twenty days' labor. Deduct this amount from three hundred and forty, the time required for the preparation of forest lands and there will be a balance of two hundred and twenty days left to devote to any other preparation of the land you may deem advisable. The lime once spread, the labor is over; full tasks become the order of the day; and the planter may rest with the assurance of *all* who have given the lime a fair trial, that he has put on his land a manure whose beneficial agency time, so far from destroying, will continually develope.

It is a common opinion, that clover will not endure the hot sun of South Carolina. This opinion is not more prevalent with us now than a similar opinion respecting the adaptation of the climate of lower Virginia to clover was a few years since in that state. Since the introduction of the use of calcareous manures the cultivation of clover has become universal in lower Virginia. (*c.*) It is evident, therefore, that it was the want of *something* in the soil, and not the warmth of the sun's rays, that was at fault in

Virginia. I have for three or four years past been watching a little experiment which induces me to believe that it is not the sun, but the soil of Carolina, which is fatal to the growth of clover.

A few years since I received from a friend several varieties of grass seeds which I planted in my garden on the borders, immediately under the walls. At the commencement of summer I had a promising crop, but in autumn it was all dead. The following winter I observed a single plant of clover growing on the north border. To this plant I applied lime liberally. It flourished during winter, and in May proved to be red clover. The following winter the clover was still there. It had spread. Lime was again applied. It has continued to improve, and bids fair to overrun my garden.

Now this I admit is a very small experiment to base a large hypothesis upon—but it is not on that account the less valuable. Here is a single plant which has survived the first summer, observed during the winter, small and sickly, treated with lime, the manure which all farmers have declared to be indispensable to clover, thriving under the treatment, bearing with equal success the heats of '38, the droughts of '39, and the rains of '40. It must be observed too, that if the sun is injurious to clover, the position of this plant has been a most unfortunate one. Placed on the south side of a wall it is never shaded but by the very early and late suns of our longest days, and in addition to the direct rays of the sun, it is exposed to all the heat radiated from the wall.

I do not despair of seeing lime in general use in the limestone rigions of South Carolina. Improvements of all sorts are slowly adopted by agriculturists. In consequence of the great absence of planters from their estates, they adopt new methods more slowly than any others who derive their subsistence from the soil. A few years since it was a mooted question at every parish club in the low country, whether the profits arising from manuring our fields were great enough to authorize the expenditure of the labor necessary to collect the manure. Nor was there wanting many who even doubted whether it was of any use at all.

It seems never to have entered into the minds of such persons that the highest attribute of man is his capacity for improvement to an indefinite degree, not only of himself, but of every thing committed to his government, and that he never so completely fulfils his destiny as when exercising this capacity; that Providence has deprived us of an Eden in order that we might, by aspiring after its possession, exhibit the greatness of our intellectual resources in their most beneficial aspect; that to impair the value of that which he has given us to use and transmit to our successors, is disobedience and a wanton abuse of his goodness. Such reflections have come home to us when contrasting our declining condition with the present prosperity of others, who in a more richly gifted region are following the destructive example of our fathers. Animal and vegetable manures have forced themselves into general use, and I have no doubt that in a few years we shall see the powerful agency of the mineral manures exercising the happiest influence over the destiny of this state.

A SPECULATOR.

Note.—I have carefully abstained from any hypothesis respecting the modus operandi of lime. Mr. Ruffin is disposed to regard it as valuable, chiefly as a corrector of acidity. (*d.*) That it has other valuable qualites is highly probable. It has made me good cotton when the land immediately adjacent produced absolutely nothing but a few scattered and half grown stocks.

Respecting the composition of our lime-stone, I have seen two statements differing widely. Dr. Johnson finds about thirty per cent. of magnesia. Mr. Shepard finds little or none, and this difference too in specimens from the same locality. (*e.*) Viewed as a corrector of acidity, the magnesia is perhaps as valuable as the lime, and the value of the manure would not be less in consequence of the presence of so much magnesia. Writers on agriculture have always represented magnesian earths as unfruitful, and ungrateful. This may be true, but it does not follow that a small quantity of magnesia added to the soil may not be advantageous to it. A soil overcharged with lime, would be as poor as one overcharged with magnesia.

Apart from the *mechanical* agency of lime on soil, I apprehend that its value is not greater than would be that of any other alkali. I have seen twenty bushels of ashes produce results quite as satisfactory as a hundred bushels of mild lime. (*f.*) Whether it exercises an agency for any length of time, I have not the means of ascertaining, but as an auxiliary manure to the growing crop, I consider it so valuable, that I have all the ashes on the plantation carefully husbanded. A small reward offered to the negroes induces them not only to save their ashes, but (I have had reason to believe,) to burn more wood for the purpose. Any one who has not tried the experiment would be surprised to find how much may be collected by holding out an inducement.

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(*a.*) We shall not affect to disguise the gratification which we have derived from reading this article, caused by the writer's high and grateful appreciation of our individual labors in this important department; as well as from his testimony that the seeds of this improvement, which we have for years been trying to plant in South Carolina, have at last struck root, and now promise good and speedy fruits. The good work has been at last begun by a few planters, of whom the writer of the above article seems to promise to be among the most zealous and efficient. We have however to regret, that, by his withholding his name, and its authority, he has been content to be counted but as a "Speculator," instead of a practical operator and unquestionable witness of facts. We earnestly urge him to persevere—and while he may be the first in South Carolina to reap large profits and increase his wealth from this source, he will exhibit such evidences, that his example will soon be followed by hundreds of his countrymen.—ED. F. R.

(*b.*) All the marls sent to us from South Carolina for examination were very rich; and in chemical constitution and texture might be deemed rather a soft lime-stone or impure chalk, than *marl*, such as is common in lower Virginia. The last sentence above shows that exposure to frost will serve to reduce the lumps, so that the great cost of burning to quick-lime may be avoided; and there is no use in burning, except to reduce the earth or stone to powder.—Ed. F. R.

(*c.*) This expression covers too much ground. It should be limited, first, to the *marled* lands, as clover will not grow except where calcareous matter, in quantity sufficient for the purpose, has been given, either by the bounty of nature, or by the industry of man. But further, many persons have marled who sow clover to but little extent, notwithstanding its known value after marling; and thus they lose half the benefit to be derived from this mode of improvement. If the writer of the foregoing article, or even any of his most incredulous countrymen, were to visit the marled lands of lower Virginia, all would be fully convinced of the great profit of the fullest extension of the same practice at home. But we are sorry to have to confess, that they would also see, and in the greater number of cases, abundant evidences of neglect to draw full benefit from this great source of riches.

If the legislature of South Carolina, or the different agricultural societies of that state, would depute a dozen of the intelligent planters of their marl region to visit some of the most judiciously marled lands in Virginia, and to report thereupon, we venture to assert that such visits and reports would produce many thousands of dollars of net profit in the course of a few years. The later and permanent annual profits of South Carolina, from this source, and which will and *must* be secured at some future time, should be estimated not by *thousands*, but in *millions*.—Ed. F. R.

(*d.*) The effect of calcareous manure, in neutralizing the poisonous acid of soil is immediate, and most manifest and striking, and the first that affords profit. But a far more important operation of calcareous manure, though later, slower and more gradual, is that by which it combines with and fixes vegetable manure, and productiveness, in the soil, and to which effect there is no limit short of the greatest possible degree of productive power of the best lands under the same climate, exposure, &c.—Ed. F. R.

(*e.*) We have found no magnesia in such specimens of South Carolina marl as we have examined for that purpose, and much question the existence of magnesia, in quantity worth consideration, if at all, in any of these marls. Dr. Joseph Johnson, of Charleston, was the first person who announced what was to us a novel and remarkable fact, that magnesia existed, and in large proportions in many of these marls. We sought for it in vain, in such specimens as were within our reach. Afterwards we learned from Dr. Johnson that he had been mistaken in that respect, by some error in his mode of analysis.—Ed. F. R.

(*f.*) Wood ashes (after being deprived of their potash, which is itself a valuable manure) consist principally of carbonate of lime and of phosphate of lime. The former is precisely the same as the main and (usually) only valuable ingredient of marl, but in a minutely divided, and therefore much more immediately active state. The phosphate of lime is what forms the earthy or solid material of bones—the great value of which as manure is well known to all well informed agriculturists. Therefore it is plain enough why ashes, whether leached or not, should act admirably well as manure on lands deficient in alkaline ingredients, and in fertility.—Ed. F. R.

THE PORK BUSINESS AT CINCINNATI.

From the Cultivator.

During the past season 150,000 hogs have been cut up here, averaging 210 lbs., making 31,500,000 lbs. pork; employing in this and the branches of packing, smoking, &c., 1220 hands, and a large capital. The season of '38 and '9 was still larger, 210,000 head were then cut up, averaging 175 lbs. Pork then bore a high price, and the farmers were more eager to get it to market than at present, when it sells so low. I will now state the capacity of one house for this business. 25,000 hogs have been cut up in a single season, 1500 of which can be done in one day, with fifty hands, averaging 200 lbs. wt.—800,000 lbs. can be smoked at one time, or 4,000,000 lbs. in a single season. The season for killing and packing is short, only about ten weeks.

As to the color of hogs, the packers are totally indifferent to it, a black or a spotted, a blue or white is all alike to them, nor does it make any difference with the purchaser or consumer. I hope, therefore, to hear no more objections to the color of Berkshires; it is never thought of here at the west. Now to the weight, and upon this point I was very minute and particular. If the side pork is reasonably thick, say four or five inches, they do not wish the animal to weigh over 250 to 300 lbs., for with such hogs the shoulders and hams are *small and tender, easily* saturated with salt and smoked, and bring the highest market prices. Indeed, the best prices that they fetch is in the Virginia market, and then they only want a 200 lb. hog. Animals that weigh 450 to

500 lbs. are long and thin here, and do not cut any thicker side pieces than those of a proper conformation, that only weigh 250 lbs., then the hams and shoulders of the large animals are *coarse and thick, difficult to salt and smoke*, and do not bear so high a price in market by *half* a cent per pound as the smaller and more delicate hams and shoulders. I wish to call the particular attention of the pork raiser to these facts. It will be seen now that the very smallest sizes of the fine Berkshires can easily go in weight over the desideratum of the pork purchasers and packers of the west. The live weight of the least Berkshire sow I ever had in good breeding order, weighed on the scales alive 303 lbs., and could easily fat to dress net 350 lbs., and cut at least 4 to 5 inches thick of side pork, which makes heavy mess pork enough for even the Boston market to supply to its fishermen, and give tender, lean, juicy hams and shoulders with very small bones, and a trifling per cent. of offal. Now what more can the public want than this? But urged on by a spirit of pride, and for the sake of bragging about sizes, they seem determined to sacrifice to this folly the finest race of the swine kind that ever existed. My breeders now run from 350 to 600 lbs., in good store order, and would fat from 400 to 700 lbs., double the weight required by purchasers at the greatest pork mart in the Union, and still the cry is for size, size! Well, size they shall have now to their hearts' content, for it is my intention to import some Berkshires this season, that will *fat, full grown, to one thousand pounds.* They can be had in England just as easily as a finer medium-sized race, and I am determined, for one, that the cormorant appetite of the public shall be satisfied, in this particular, to the full. At the same time to please myself and the more judicious number of my purchasers, I shall still continue to breed good medium sizes of about 400 lbs. weight, and we shall see at last who is right.

THE SALVING OF SHEEP, WITH A VIEW TO THE PROTECTION OF THE ANIMAL WITHOUT THE DETERIORATION OF THE FLEECE.

By Mr. R. Boyd, Innerleithen.

[Twenty Sovereigns.]

From the Prize Essay of the Highland Agricultural Society.

From the material improvements which have taken place in the woollen manufactures of Scotland within the last ten or fifteen years, no wool but that considered of sufficient purity for the manufacture of *white* goods, and, at the same time, calculated to receive the finest tints of color, can with impunity be used in the manufacture of the various descriptions of goods now generally produced by the manufactures of this country, consequently wool smeared with tar and butter is now little sought after. From the increasing demand for white wool, many of the store farmers allowed their flocks, even in high and exposed situations, to winter without a salving of any description whatever. This neglect, however, except in some very peculiar situations, can seldom be continued with impunity above a year or two, as under it both the quantity and quality of the wool invariably fall off, and it rarely fails to produce a *kempy* fleece, that is one intermixed with dead white hairs, which are found, when submitted to the dyeing process, to assume a different tint from the rest of the fleece, and of much less permanency of color. For this reason, wool so treated can only be applied to an inferior purpose, because it has suffered deterioration. It is, therefore, not possible to maintain, in health and vigor, sheep which are exposed to the vicissitudes of weather in elevated districts, without the application of some salve to protect not only the health of the animal, but to increase and improve the growth of the wool, possessing properties anxiously desired by the manufacturers.

Of late years various salves have been recommended and adopted, and the one now most approved of, if we may judge from its general adoption in the Lothians, in Peebles, Selkirk, Roxburgh, and Berwick Shires, is a composition of powdered, crude, white arsenic, and black soap, in the proportion of one pound of arsenic to six and three-quarters or eight pounds of soap, with an addition of butter or oil, in such proportions as the judgment of those who have the management of the stock may approve, and this quantity with water is considered sufficient for the salving of a hundred sheep. This description of salve was first introduced into the county of Peebles in 1833, by Mr. Murray of Kedmoor, near Peebles, and the Messrs. Oliver, of Williamslee, in the parish of Innerleithen. Although Williamslee is one of the most elevated and stormy situations in the county, the result was highly satisfactory. Mr. Thomas Ketchen, late tenant of Huthope, which marches with the farm of Williamslee, mentioned to me, that the portion of his stock which was salved with the new salve, stood the severity of the winters of 1836 and 1837 much better than those smeared with tar and butter; and, in corroboration of this effect, I may mention, that the shepherd of Kirkstead (which is situated on the north banks of St. Mary's Lake) assured me of a similar result in 1837; and, moreover, that the crop of lambs was fully one-third more than those produced by the ewes smeared in the old way. These facts can be attested by Mr. Ballantyne of Holylee, to whom the stock belongs.

It is worthy of remark, that the stock on the farm of Blackhouse, on the estate of Traquair, amounting to upwards of a hundred scores, were for a number of years much infested with vermin of various descriptions, but in particular with lice. Heavy smearing with tar and butter, and every other means which ingenuity could devise, were resorted to, but without effect. In 1836 the farm was let to the present tenant, Mr. Salton, who with confidence salved the most infective part of his flock, and the result was in every respect higly satisfactory. On the farm of Hindlee, which is of great extent, and occupies an elevated situation in the county of Roxburgh, the stock, when in the possession of Mr. Davidson, who smeared with tar and butter, were subject to great mortality, but Mr. Scott, who succeeded Mr. Davidson on the farm, tried the new salve, and thereby reduced the annual loss to a mere fractional part of what it was.

Notwithstanding the facts here enumerated in favor of this new salve, on account of its containing nothing of an adhesive nature, and from the

number of sheds or openings made in the fleece in laying it on, and which rarely close again during the winter, the sheep are very liable to be chilled by frosty winds, and thereby contract serious diseases. Water in the head is thus induced, as first pointed out by the Ettrick Shepherd in the Farmers' Magazine of 1812. This complaint is most common after a windy and sleety winter; and it is most destructive on farms that are ill sheltered; and attacks most virulently the sheep during the first year, when the wool naturally separates along the back, leaving it exposed to the wet and cold.

As a remedy to this evil, Mr. Ballantyne of Holylee has salved his whole flock, amounting to 160 scores for the last *three years*, with the following composition or salve, viz.:

¾ lb. crude white arsenic at 7d. per lb., - - - -	£0	0	5¼
28 lbs. butter at 9s. 6d. per stone of 22 lbs. or 5¼d. per lb., -	0	12	3
5 lbs. black soap at 4d. per lb.,	0	1	8
10 lbs. rough turpentine at 1¾d. per lb., - - - -	0	1	5½
	£. 0	15	9¾

with 30 pints of water it forms a salve for 100 sheep, which cost something less than 1¾d. per head. The water being heated serves the purpose of keeping the salve in a liquid state during the time it is applied to the sheep; and too much attention cannot be bestowed on constantly stirring the mixture, as the arsenic is apt to fall to the bottom; and no less attention ought to be paid to the spreading of the salve in an even manner, as in the event of any part of the body being neglected, the severity of the attacks of the insects will be felt in proportion to their limited range on the skin, which soon becomes encrusted with scabs on the neglected spots. The only difference between this salve now used by Mr. Ballantyne, and that which was introduced into this country in 1833, is the rough turpentine, which from its adhesive nature, not only tends to close the sheds which were made in the fleece, but assists the wool to retain possession of the salve during its growth It is found admirably adapted for repelling external moisture, preventing cutaneous diseases, and killing instantly all the insects with which sheep are infested. And I have found, upon the strictest examination, that the sheep produce a more copious supply of yolk or wool-grease from being salved with this mixture than with any other; and by whatever means sheep are improved in condition, there will always be a corresponding increase of the fleece, which, when produced of sufficient length for combing purposes, will readily sell for one-eighth more per stone than that which can only be used in the manufacture of woollen cloth or hosiery yarn; and it will, moreover, be found upon trial to weigh at least an eighth part more, thus making a difference of one-fourth in favor of the wool produced from Cheviot sheep, which have thus been salved. It is a well-known fact to shepherds, that a successful lambing time very much depends upon the condition of the ewe, and that among hill-sheep the ewes are much more kindly to their lambs, when themselves are in good condition and have plenty of milk, than when in low condition and unable to nurse them Besides, so effective is this salve, that it prevents the inclination which sheep have in general for rubbing against foggy or grassy banks, whereby the wool becomes impregnated with impurities, which are not unfrequently found in wool to so great an extent, that the labor of picking it sufficiently clean adds much to its price, and even after all, the manufacturer is obliged to use it to an inferior purpose; and it is, moreover, not an unfrequent occurrence, that even when the wool has been carefully looked over by the most accustomed hand and discerning eye, previous to its manufacture, many of these impurities make their appearance in the finished article.

Sheep, when so salved, are seldom or never found to die of falling "*awald*" or "*awkward*," that is, on their backs; and the wool never peels or falls off previous to clipping.

Wool which has been thus salved is well adapted for mixing with skin-wool which has been removed from the pelt by the application of lime. Skin-wool, when manufactured by itself, is extremely liable to become discolored during the hot days of summer, immediately after the process of oiling has been performed. A very slight admixture of the salve-wool with it, acts as a complete security against its discoloration. In scouring, too, the quantity of soap required is considerably less after the salve. When sheep have not been salved, or been simply bathed, or so insufficiently smeared as to be alternately wet and dry, it not unfrequently happens that the wool has a brown decayed tinge at the extremities of the staple, which, upon the slightest pressure between the finger and thumb, crumbles away. Wool in this state is extremely liable to "*shell*" during a storm, that is, to adhere to large pieces of frozen snow, and also to be frozen to the ground, from which they cannot be relieved without a considerable loss of wool. Wool in this state possesses in but a small degree the *felting* or *milling* properties, so that it is impossible for a manufacturer to make with it a cloth to suit the present fashion, and at the same time to have a sufficient texture to support a proper finish. Cloth made from wool in this state, although it appears tolerably firm after the milling process has been accomplished, is unable to resist the card or teazle which instantly destroys the felting property, and reduces it to a mere flannel. By a judicious admixture of salved wool with unlaid or skin wool, the felting property of the unlaid is considerably increased, and consequently a less quantity of it is required to produce a given length of cloth than when manufactured wholly from unlaid wool. It is thereby evident that salved wool is superior for woollen cloth, or for any description of goods for which wool can be used.

Wool which has been so heavily smeared, or so imperfectly washed that it cannot be submitted to the process of manufacture until being previously scoured, incurs an additional expense to its prime cost of not less than 2s. per stone. The most simple method of scouring wool is with hot water and a fourth part of stale urine. The ammonia or volatile alkali which exists in the urine, combines with the oil of the wool, and forms a soap, which, being soluble in water, is dissolved and carried off. This process of itself does not incur any thing like an expense of 2s. a stone; but, when the labor of drying, and picking the

impurities from the wool which collected in the drying, and the extra quantity of oil which is required in the preparation of the wool for the machinery, amounting to two or three Scotch pints for every twelve stones, as also its forming ultimately an article of much less value, than that which is manufactured from the wool as shorn from the sheep's back—when all these circumstances are taken into account, it will be readily admitted than an expense of 2s. a stone may be easily incurred.

Until the year 1832 or 1833, the practice of salving Leicester sheep was scarcely known in Scotland. Since that period a number of farmers who have Leicester and half-bred sheep, have been induced, by the favorable effects of this new salve upon the Cheviot and blackfaced sheep, to make trial of it, and they have found essential benefit to arise from it in protecting the health of the animal, and producing a marked improvement in the wool. Mr. Johnston of Halltree, parish of Stow, who keeps a half-bred stock, was among the first who introduced this mode of salving into that part of the country, and his clip of wool brought, in 1838, 42s. per stone. Mr. Cockburn of Sisterpath, near Dunse, who has a considerable flock of Leicester sheep, salves with this salve; and Messrs. Barff and Son (extensive wool-staplers in Wakefield,) speak of Mr. Cockburn's wool in the highest terms of commendation.

The washing of sheep seems less understood in this country than any other department connected with the management of stock. Some years ago I spent a few weeks in the Highlands of Pennsylvania with Dr. Rose of Silver Lake, a great enthusiast in the management of stock. For many years Dr. Rose has kept upwards of five or six thousand sheep of various descriptions, principally for the purpose of lending out in shares. During my stay at Silver Lake I had the pleasure of paying a visit to Messrs. Hogg, nephews of the Ettrick Shepherd, who farm extensively in shares with Dr. Rose, to examine their method of washing sheep. In place of washing them in a running stream, as is generally done in this country, they had a pond constructed of a size corresponding to the extent of their flocks, which was filled with water from the adjoining creek. At the commencement of the operation, several scores of the sheep were carefully hand-washed, immediately after which the water in the pond had the appearance of a lake of soapsuds. The remainder of the flock, amounting to upwards of forty score, were compelled to swim across the pond, and during their passage were twice dipped over head and ears by two of the shepherds who were placed at proper distances. On account of the fleeces appearing of a dusky color, I suggested to the Messrs. Hogg the propriety of swimming them across a pool of clear water, which was immediately adopted, and in consequence the dusky color disappeared. It was quite evident that the sheep which were *last* washed in the *pond* were the whitest. Hill sheep after being washed should be driven to a clean pasture-field, and there remain for five or six days to allow the return of the natural yolk into the wool, which is found better adapted for the various purposes of manufacture, than wool clipt before the yolk has filled up its pores.

In the management of the fleece, too much care cannot be bestowed to exclude all impurities in rolling it up, which ought to be done in as firm a manner as possible, but without stretching the fibre.

AGRICULTURAL LEGISLATION.

From the Kentucky Farmer.

We deem the present a most fortunate conjuncture in which to direct the attention of our readers to the subject of that improvement in the affairs of agriculture which may be promoted by the action of the people in their organized capacity—by state legislation. The country has passed through a fierce political conflict, during the rage of which no subject could engage attention but such as was inevitably whirled into the political Maelstrom; but having now, as we trust, laid down our partizan arms, it becomes us seriously to consider of and act upon those great measures of policy, relating to our permanent interests and happiness, which have been too long neglected. We can come to the labor now with minds fitted for the accomplishment of our great ends. No new and exciting contest is immediately ahead of us to distract our sober thoughts and hurry us into strife and madness. We are all brethren in interest and feeling, when we come to think of promoting agricultural improvement. On this subject, party cannot divide us. We are one—unalterably, inseparably one. The party politician, with polluted and polluting foot, has not invaded this hallowed ground. It is too sacred for his tread and he dare not approach it. It is too extended for his narrow ken, too comprehensive for his feeble grasp, too weighty for his puny strength. Let us then, throwing away the partizan and resuming our proper character of genuine political economists, meet and labor together as we should, in sincere and earnest harmony, for the promotion of this greatest of our country's interests.

What then shall we do? What ought to be done? By what means, by what instrumentality shall we still further promote agricultural improvement? These are grave questions worthy of deliberate consideration. We have repeatedly offered our individual views upon the necessity of legislative action in aid of the agricultural interests. The more we have reflected upon the subject, the more we have regarded the experience which every day brings forth, the more we have weighed the relations existing between the various classes of interests and pursuits of the country, the more we have earnestly looked into the necessary means of establishing and perpetuating the solid prosperity of the people who rule this great republic; by so much the more are we confirmed in the faith that, so far as the distinctive claims of agriculture are to be regarded, the legislation of the country must be effectively and thoroughly reformed. We have not time or room here to go into elaborate reasoning on this subject; but if kind Providence spare our life, we propose ere long discussing the tendencies of existing systems of legislation and presenting in connexion what we deem demanded by the permanent interests and substantial glory of the country. We shall have some things to say which may not accord with some of the popular

notions of the day: but we shall speak fully and fearlessly whatever we deem it becomes the dignity of an independent freeman to utter.

For the present, then, we declare our solemn conviction that the legislation which is not based upon the idea of benefiting the agricultural interest, which does not substantially regard it as it really is, as the basis of all solid prosperity, is a legislation of deceit and fraud, the tendencies of which are to deprive agricultural labor of its just rewards to bestow favors on subordinate pursuits. Such a system of legislation ought to be arrested if there be any thing substantial in the doctrine of the right either of numbers or property, or both conjoined, to govern.

That we have had, as yet, no legislation looking directly to the promotion of agriculture, is a truth as well known as it is mortifying and painful to confess. That legislation may be wisely directed to the effective promotion of agriculture, is a fact which has been most conclusively demonstrated in the experience of every civilized nation on the globe but our own. That the failure to legislate for the radical improvement of agriculture in this country, is as much at war with the spirit of our political institutions as injurious to our diversified interests, is a truth which is undeniable and which ought to be illustrated in the political action of the people—the political masters of the government. That the farmers—the great and substantial majority of the people—ought to reform *their* political action, is a question which we think can be demonstrated fully; and could they only be aroused to a proper consideration of their political dignity and rights, all the needed reformation would be speedily wrought. We shall labor these points in the course of our discussions. Meantime, we will here state some of the measures which, for the benefit of the important practical interests of the whole state, we think should be put in operation by a wise course of legislation:

The periodical collection and publication of our entire productions and consumptions, distinguishing the imports and exports from the mass.

A survey of the natural resources of the state, by a corps of scientific and practical men, in the departments of Geology, Mineralogy, Chemistry, Botany, Zoology and Agriculture.

The endowment of a board of agriculture or the establishment of an agricultural bureau as a branch of one of the departments of the government, charged with the execution of important duties to be assigned by the legislature.

And the establishment of a system of education by which the freemen of this republic, destined to be as well the masters of the government as lords of the soil, may be as thoroughly instructed in the great business of their life as the professor of any other art or science. This is the primary and radical remedy for all the defects in our legislation; and it is only by the adoption of this measure, that the prosperity and glory of the country can be laid on foundations of ever-during permanency.

Let the farmers, then, ponder these considerations. *They* hold the poison and the antidote. *They* only can entail on themselves the miseries of a policy of delusion and humbuggery, or establish that which shall, like perrenial fountains, send forth, gushing and pure, unwasting streams of prosperity and happiness. We call upon you, farmers, to take your own interests into consideration. If truth can rouse you, lethargy shall no longer bind you in her soothing but ruinous embrace.

AN ACCOUNT OF THE INSECTS INJURIOUS TO TURNIPS.

By Mr. Mathew Marmaduke Milburn, Thorpefield, Thirsk, Yorkshire.

[Silver Medal.]

From the Prize Essay of the Highland Agricultural Society.

Of all cultivated plants, perhaps there is not one which has more enemies in the insect world than the turnip; the frequency, general cultivation, and rapid succession of the turnip, as well as the great quantity of its peculiar vegetable matter which is carried off by decomposition every year, when a turnip crop occurs, has doubtless tended considerably to increase the number of its natural enemies, and in but few years does the crop escape entirely the ravages of some order of the insect tribe. The great improvement of land for the last few years has brought soils under turnips which are not perhaps entirely congenial to their growth, but by forcing they may be obtained. My farm is not a real turnip soil, and, consequently, it is more liable to the depredations of insects of every kind, than a soil more decidedly calculated to grow turnips, and the plants are less capable of resisting the serious attacks made upon them in such cases, than when the soil is more congenial to their growth.

1. The first depredator which I shall notice, but of which, perhaps, so far as its natural history and habits are concerned, I know the least, is the turnip flea (*Haltica nemorum.*) From the smallness of its size, it requires a degree of minute attention, which I have been unable to give; but of its effects I have witnessed sad examples. The insect is a small beetle, of a brassy black color, with two straw-colored strips lengthwise on the wing cases. The insect usually makes its appearance about the 20th to the 27th of May; if the weather be warm and sunny, generally at the first mentioned period. The numbers at this time are not very great. It feeds on every species of the genus *brassica*, and in the early stages of their growth does them serious injury, if it does not altogether destroy them. On being approached, it jumps from the plant and drops to the ground, usually with its back downwards; the straw-colored stripes being much more distinguishable than its black under side. It has wings, but seldom uses them except when in the act of migration. It is quite an erroneous opinion to suppose that it can move only by jumping, formed probably because it is generally noticed jumping when it is approached.

The extent of the injury done is most serious. They commence by eating the plant just when the cotyledons are well unfolded, and in some cases consume the whole of the leaves. If they are not sufficiently numerous for this, they retard the growth of the plants, and impair their vital energy considerably, and often sadly injure a

crop after all traces of the insects themselves have disappeared. Great disputes have occurred whether the eggs of the insects are deposited on the seed, in the manure, or in the earth; but as these are matters of published notoriety, I conceive they have no right to be canvassed in an account like this. Thus much may be said, that the generally received opinion now is, that the eggs are deposited on the leaf, and that the minute larvæ feed in the interior of the leaf before they attain the flea form.* I am strongly inclined to believe this from the fact, that generally for a week or more before the attacks of the fleas become any thing like so general as to threaten destruction to the plants, the latter lose their thriving appearance, their growth is arrested, and it is more than probable that the larvæ are then at work in the interior of the leaves, which the plant has to resist, instead of growing so rapidly as it otherwise would. A few insects remain in the perfect state through the winter; I have observed them on a sunny day in the beginning of November, though their appearance after August is by no means common.

Prevention of their attacks may be in some measure effected, but any application by way of cure, when they have commenced their ravages, is out of the question. I have tried sulphur, lime, soot, &c., without any perceptible effect; to prevent, therefore, should be the principal object. Those I have found to be most useful as preventives which most tend to excite the vigorous and rapid growth of the plants in their early stages. Thus, the ridge or drill system, in which the turnips are put in immediate contact with the manure, is most likely to enable the plants to overcome an attack. Plenty of seed is also desirable, as the thicker the plants come up, the more rapidly they grow, and the more vegetable matter there is for the fleas to consume. There is no fear of the crop being destroyed after the rough or secondary leaves are expanded. Another precaution is, to keep the land clear of weeds, and above all to preserve as much as possible the moisture in the soil previous to sowing in a dry season. As a more remote mode of prevention, the charlock, the turnips from amongst the growing corn, and the weeds of the cruciferous kind should be kept thoroughly down, as these form nurseries for the insects before they commence their attacks upon the turnips.

2. The next insect to the attack of which the turnip is liable is the black caterpillar, the larva of the yellow saw-fly (*Athalia centifoliæ*). In 1835, the north of England was visited by these depredators to a most alarming extent; in the following year they penetrated into Yorkshire, and in small numbers into some parts of Scotland. The attack in this year, though severe, was, however, less destructive than that of the preceding. The caterpillars are usually observed when the plants are of about three weeks' growth. In their early stages the caterpillars invariably attach themselves to the under side of the leaf. They are about one-fourth of an inch long, and of a whitish-gray color, and not very easily discerned. They change their skin at least three times during their existence in the caterpillar state, and after each change appear lighter colored at first, but in a few hours become a brighter, deeper black, destitute of hair, but the body considerably wrinkled. About twenty-one days after the caterpillars have emerged they burrow into the earth, and there form a cocoon or case, remain in it twenty days, and then emerge a yellow fly; again to breed and furnish a fresh supply of caterpillars. This fly is furnished with a peculiarly-shaped ovipositor of a saw-like construction, with which she punctures the edges of the turnip-leaf, and deposites her eggs singly. A portion, however, of the caterpillars which disappear remain in the cocoon until the following summer, to provide a supply of caterpillars for the succeeding year. I have bred them, and fed them in a glass jar, and watched the whole of their habits and changes, and I know of no insect which affords greater facilities for observation than the one in question.

The attack is solely confined to the leaves of the plant. They consume the whole of the cellular texture of the leaves, and nothing but the fibres remain. No plant can resist this, and the shortness of the work of destruction of as fine a crop as ever appeared above ground is almost incredible. I have observed as many as twenty caterpillars upon a single plant, and perhaps not one plant occurred in the field without some caterpillars upon it.

By way of prevention little can be done, as the only warning of a visitation given is the appearance of the yellow flies, which generally precede the caterpillars the most of a fortnight. I always instruct my turnip-hoers to leave their work in order to chase and destroy every fly they see of this description. In 1837, owing principally to this precaution, I believe my fields escaped, while some in the same parish were more or less consumed. When the attack has commenced the hoe ought immediately to be stopped. Ducks of about three weeks old should be turned into the field; if they are much older they will eat the plants and reject the caterpillars. Hand-picking should also be resorted to. I saved a field of eight acres in the "canker year," (1836,) by employing children to gather them, and put them into closed vessels. I gave these sixpence per day, and the numbers they gathered were enormous. I destroyed them by pouring boiling water upon them, which was instant death, though they will live for an indefinite period in cold water —it seems to slide from their oleaginous skin.

3. The next insect which the turnip crop is liable to suffer from is the wire-worm. A description of it is scarcely necessary, for, from the unlettered peasant to the scientific entomologist, every person who knows any thing of rural concerns is familiar with it. In order, however, to describe exactly the individual insect I mean, I may observe that the grub is of a yellow color; its body is nearly cylindrical, and composed of

* The habits of the larva in this respect are no longer matter of conjecture. In a memoir on this insect, published in the 2d volume of the Transactions of the Entomological Society of London, Mr. H. Le Keux has demonstrated that the larvæ feed on the interior of the leaf, consuming its pulpy substance in the same manner as the mining caterpillars of various small moths, and certain dipterous larvæ. It undergoes its transformations in its subcutaneous galleries. The larva is figured in the memoir just alluded to, as well as in Westwood's Introduction to the Modern Classification of Insects, vol. i., p. 383.—Ed. Farmers' Magazine.

twelve segments. Its head is rather brownish, and it has six feet situate near the head—this distinguishes it from a caterpillar.* In the grub state it continues three years, which accounts for its destroying turnips, seeds, and corn crops, on the same piece of ground successively. It then emerges in the shape of a beetle, the distinguishing characteristic of which is, that, when taken by the posterior extremity, it depresses, and then suddenly elevates, its head and thorax, and gives a sounding *click*, hence it has been placed amongst the click beetles, and is called the *Cataphagus lineatus*. The beetle is about four lines long; color grayish-black; the wing cases have stripes of gray arranged longitudinally.

Its ravages are confined to the grub state, and it feeds on the roots of the turnips when they are from four to eight weeks old. I have seen as many as six wire-worms attached to the root of a single plant. Their presence may be detected by the falling of the leaves of the plant, and then assuming a dark deadly green. The insects eat the root at a depth of one or one and a half inch, and sometimes gnaw through the whole root, and the turnip of course dies. Occasionally a whole field, though more generally a portion of a field, subject to it will go off.

Cure there is none, that I am aware of, but much may be done by way of prevention. I have before me several cases noted down where a crop of potatoes, taken before the turnip crop, has effectually tended to prevent the attack. I will offer one striking instance furnished me by a personal friend. A trapezium-shaped field was in 1833 sown with turnips, excepting the angular side, which was potatoes, the turnips went off by the wire-worm. In 1837 the field was again in turnips. The part which was potatoes in 1833 carried a good crop of turnips, and were uninjured except the headland, *which had not been potatoes*, and where the turnips went off, as they did in the other parts of the field which had been turnips in 1833, I have heard of the wire-worm injuring potatoes, and of this I have no doubt, for I have found them half buried in the potato, but did they ever feed on them? I confined five wire-worms in an earthen jar with soil, and gave them a healthy potato. Not a particle of the potato was eaten, and the insects all died. I can easily conceive that, either in the agonies of death or in search of food, a wire-worm might burrow through a potato the same as through a clod of earth, but that they ever feed on it I cannot believe without better evidence than I have had hitherto. Whether it is that a potato crop actually starves the wire-worm from want of food, or whether there is some peculiar effluvia from the tubes or haum I cannot say, but the fact is well known by several eminent agriculturists I can name.

4. There is a too well known disease to which turnips are liable, called "fingers and toes." The fibres or tap root of the turnip, or both, thicken, and knobs of every conceivable shape are formed; these swell and crack, and of course begin to putrefy; this goes on, and the plants disappear rapidly until a field of promising turnips are not worth five shillings per acre. Those plants with the most fibrous roots stand the attacks the best. Every conceivable variety of opinion has been mentioned as the cause of this disease. I shall not even advert to them, but give simply the results of my own observation. Knowing certain fields to be subject to attacks, I have narrowly watched the progress of plants from sowing time forwards. The first thing I observed before they were fit for hoeing, were several ash-gray colored flies resembling the house-fly, but somewhat smaller. On examining the nervures of the leaves, I discovered eggs of the flies resembling the "fly-blows" of the *Muscidæ*. In a week maggots were formed, which crawled into the ground and attacked the root of the plant. A puncture, however slight, will cause a flow of sap to the place, and a tubercle or excrescence is formed. In this the maggot fastens. I have detected six or eight at one plant; these continually gnaw it until they either destroy it or change into pupæ, and the plant putrefies and dies. Sometimes only one fibre is attacked and then the plant survives. They emerge from the pupa and assume the fly form, some in the same season, but more in the ensuing year, to spread again the work of destruction. I believe it is the *Anthomya brassicæ* of Bouche. The length of the fly is about three lines, color ash-gray. Male fly an indistinct black mark on the back. The wings are transparent. I have taken them and bred them, and having watched every stage of their existence, I am, therefore, clear as to the connexion of the insect with the disease.

A prevention to their ravages I have found in a summer fallow. It seems to banish the parent flies, which otherwise are of still habits, whereas the frequent successions of turnips, attended as they are by a great mass of decomposed vegetable matter, encourage the flies and perpetuate the evil.

5. Another little depredator, within the epidermis of the exposed portion of the bulb of the turnip and causing a little knob to rise on the bulb, appears amongst the insects feeding on turnips. In its existing form it is a maggot and the larvæ of one of the *Cynipidæ*; I believe it is the *Cynips brassicæ*. The injury, however, it effects is so trifling as scarcely to be worth naming, for the plants affected by it are often the finest in the field. I know of no remedy, nor indeed of any method ever attempted to destroy it.

6. The last noxious insect affecting turnips, to which I shall allude, is the plant-louse, *Aphis brassicæ*. To describe it is unnecessary—multitudes, nay myriads, assailed the crops in 1836. They feasted by thousands on every leaf, and deprived it of its juices. The leaves rose in blisters, and turned a sickly pale yellow, the bulbs were arrested in their growth, and most serious injury was done to the crops. In October they took wing, and were to be seen in clouds which filled the air, and raised much annoyance by getting into the eyes, mouth, &c. Providentially they were accompanied by large numbers of the lady-birds, (*Coccinellidæ*,) which thinned them considerably. I know of no successful experiment being tried to prevent or cure. Applications of tobacco, &c., may answer for a gardener, but it is mere theory to recommend it to the farmer who has, perhaps, his half-thousand acres of turnips. Let encouragement be given to the increase of

* All caterpillars, properly so called, have six feet in the situation alluded to. The writer means that it possesses these solely, there being no abdominal feet as in caterpillars.—*Ed. Far. Mag.*

swallows and other insectivorous birds, and if this could be generally effected, it would tend more to the reduction of noxious insects than any effort of man, no matter how effective, scientific, or combined.

MARL IN ALABAMA.

To the Editor of the Farmers' Register.

Claiborne, Ala., June 12, 1841.

Since I wrote you in January last, the subject of marl has attracted some notice, and the inquiry has resulted in the discovery of several beds of shells of great fertility and of unknown extent. A few feet below the surface of the earth, on the eastern bank of the Alabama river, and within the limits of this village, there is a deposite of shells of great variety, fertility, and of easy access; and the surprise is that they should not have been discovered sooner, and applied to purposes of agriculture, seeing the hints nature has manifested by *stripping them nearly bare*, and the effect on vegetable growth below them, by the washings of the finer particles. The trees, the shrubbery, and undergrowth of every kind, indicate a better nourishment. How they came there (they are above *high water mark*) is for the geologist to explain; but certainly their position, their very great variety, their loose and disunited location, excite a curious inquiry. These shells are different in form from those seen in the soft, or rather, lime-stone, and, as before remarked, are loose and disunited, whereas the others are cemented, and capable of being quarried and polished to some extent, either by the plane or drawing-knife, and are extensively used, as a substitute for brick in building chimneys. They are mostly round, elongated, and curiously indented on the edges, nearly in contact. Some resemble the shell of the periwinkle, with receding circles at each end. Some are nearly as large as an egg; others not larger than a pea; but all lying in one common and loose mass. The shells found in the *soft rock*, as designated with us, are mostly flat, or rather slightly convex, with the outer surface furrowed, and the furrows narrowing to one extremity. Some resemble the shell of the starfish, with the points beautifully fringed, and the inner surface with corresponding depressions, tattooed in a most curious manner. But by far the most interesting view is their application as manure to poor and nearly exhausted soils. The interest deepens here, and from experiments now making, no one can doubt their astonishing efficacy. A small lot has been planted in corn, and a double handful of shells applied to each hill. The effect is so plain "that he that runs may read," and as the season advances it will be still more manifest. Do you remember the experiment made by that sagacious philosopher, Dr. Franklin, on a "clover field bordering on one of the avenues to the city of Washington, with the plaster of Paris, forming the following sentence:" "This has been plastered." A writer adds, "So astonishingly luxuriant was the vegetation, when the operation had been performed, that it became a matter of general comment." Many a poor pilgrim will sojourn here ere long, to read this experiment, and to improve his bad corn.

About five miles below this place, and on the western bank of the river, there is a similar deposite; and still lower down the river, some eight or ten miles, there is another; all said to be equally rich, abundant and accessible. I have observed, as a general fact, that our richest alluvial lands are in contact with the poorest pine lands, and I have thought their great fertility was owing to the washings of the fine particles of sand, incorporated with animal and vegetable matter. For certain it is, no lands are sooner exhausted than these when not inundated; they become loose, extremely sandy, and incapable of sustaining vegetation of any kind. To remedy this evil, (and it is one of some magnitude, and increasing yearly, as embanking becomes more general, and the lands more worn,) we have a manure, cheap, readily prepared, of immense fertility, (yielding 90 per cent. of pure carbonate of lime,) and in great abundance. And by adding the further consideration of health, which has been proven, if any doubt, by shelling the streets of Mobile, and it would seem a matter of surprise that these extraordinary advantages and inducements have not been in general use and common practice, long since.

L. J.

CULTIVATION OF THE FILBERT.

From the Magazine of Horticulture.

The filbert is one of the finest nuts, and although great quantities of the fruit are imported, and sold in the fruit shops annually, there are scarcely any, as yet, cultivated in the United States. A sterile variety of the English filbert may be seen in many of our gardens, which rarely produces any fruit; but the finer sorts, which thrive luxuriantly, and bear most abundantly in this climate, are scarcely known in cultivation. Nothing can well be easier than the cultivation of this shrub or tree, and we are confident that were the merits of the better varieties generally known, no garden would be considered complete without them.

A few years since, we imported small plants of the most celebrated English varieties, and have, without the least attention to pruning, realized quite an abundant crop of fine nuts, for two years past, which are quite an acceptable addition to the dessert.

Among the finest of these varieties are the *Frizzled*, the Red Kernel, the Northampton Prolific, the Cobnut and the Cosford. We have found the Cosford, Frizzled, and the Northampton Prolific, the most productive varieties in this climate. All the varieties grow very vigorously in any good soil, naturally dry rather than moist, but a dry gravelly loam, or sandy loam, is considered preferable. In pruning and training filberts, the most important requisite is to keep the main stem free from all suckers; and the second, to prevent too great a luxuriance of wood, which if suffered to grow at random, will prevent the production of large crops. The nuts are produced, both upon the sides of the young wood, and upon lateral spurs, annually produced on the older branches, after the previous year's bearing lateral shoots have been trimmed away. Abroad, therefore, what is called the *spurring in* system of

pruning is adopted, and the extremities of the leading shoots are shortened every spring. This throws nearly all the vigor of the tree into the bearing branches, and produces a larger crop of fruit annually.

In some parts of England, large plantations of filberts are made, for profit. Kent is the most celebrated nut growing district, and the average crop there is about eight hundred weight per acre, although, in good soils and favorable seasons, thirty hundred weight has been raised on an acre of ground. The bushes are generally trained with single stems, and the heads pruned in the form of a hoop, kept about six feet high from the ground.

There does not appear to be the least obstacle to the profitable cultivation of the filbert on a large scale, in this country, and our dry summers would probably be found more favorable to the production of large crops, than the moist ones of England. A return of fruit is speedily received after planting on good soils, and we would, with confidence, recommend the trial of a filbert orchard, to enterprising cultivators.

In gardens, a row of the finer sort of this fruit may be advantageously introduced, as a screen or barrier, in portions where such a feature is desirable, as the foliage is large and dense, and thus the double advantage of fruit, and privacy or protection will be realized.

Newburgh, N. Y. A. J. DOWNING.

FOR THE BITE OF A SNAKE.

The most simple and convenient remedy I have ever heard of is alum. A piece the size of a hickory nut, dissolved in water and drank, or chewed and swallowed, is sufficient. I have good authority for saying that it has been tried many times on men and dogs, and that they have invariably recovered. I know of some planters whose hands are exposed to be bitten by rattle snakes, who keep them always provided with it in their pockets, and that they have several times found use for it.—*Macon Messenger.*

THE ROSE-BUG.

From the American Farmer.

This little insect wherever it is known at all is known to be extremely destructive to some other flowers as well as the rose, and is sometimes so numerous as to destroy all the early cherries, the hautboys, the grapes, and sometimes the more delicate varieties of the peach. Many years ago I have often lost all these fruits except some of the varieties of the peach by these destructive insects. Of late years they have done me little or no injury, and they are nearly extirpated from my premises—they are only to be seen at the places of their destruction—these are *Linden trees when in blossom.* When these trees first begin to blossom about my yard and garden, at one of them over a hard naked walk, I was surprised to find the rose bug, which had been vastly numerous and destructive for many years before, dead in great quantities under it—as many as a pint or quart might be swept up under it at a time *dead.* My first impression was, that the bugs died about the linden tree after depositing their eggs and terminating their natural career, but such is not the fact, and I now speak with confidence, after several years' observation and experience, when I say, the blossom of this tree destroys them, and will extirpate, or nearly so, the race from its immediate vicinity, on the farm on which they grow. This fact seems to be out of the ordinary course of nature, for we are taught to believe that all animals in a natural state are led by the wise instinct of nature to avoid that which will poison or destroy them. In rushing into the enjoyment of the delicious fragrance and honey of this flower, they precipitate themselves on their own destruction.

I state the *fact*, for the information of florists and fruiterers, and hope that those better skilled in philosophy and natural history, may solve the seeming heterodoxy of it.

On visiting Mr. George Law's residence at the west end of your town some days since, which may well be styled the "*multum in parvo*" of good and pretty things, I could but ask the question why our brother farmers should send to New England for pigs, when they may find all the European improved varieties in Mr. Law's possession, bred with great care and which may be bought at prices much lower than the prices at the north? Is a thing better in proportion to the distance you go after it, and the risk of its loss you run in transporting it—or is an animal bred in Europe and costing thirty guineas, with the cost of transportation added—better than the same animal bred in this country from the same parents at a cost of twenty dollars? This is another problem which I will thank you, Mr. Editor, to solve. T. E.

Poplar Grove, 18th June, 1841.

USES OF IRON.

From the Public Ledger.

There is a handsome row of stores now under construction at the corner of John and Cliff streets, New York, in which large circular hollow pillars of cast iron are substituted for the ordinary granite fronts. The ornamental caps and string pieces are also of iron. There is a peculiar gracefulness and lightness in their appearance. Their durability will not be questioned, and their cost does not exceed one-third the price of granite. Care should be taken not to put lead in contact with iron where it is exposed to moisture. A galvanic action is excited that is very destructive to the iron, which is the more oxidizable metal. This curious phenomenon may be observed in the iron railings of the Philadelphia Library in South Fifth street, and in the house next below. The iron is in some cases entirely eaten away where it touches the leaden filling. I observed last spring an expensive zinc roof on Mrs. Chancellor's new country seat, on Schoolhouse lane, which they were stripping, because it had been ruined by using iron nails to secure it to the rafters.

ANTHRAX.

NUT GRASS.

To the Editor of the Farmers' Register.

Elizabeth City, N. C.

* * * You will gratify me by asking your many valuable correspondents, if they can find any way to destroy what is called in this section the *nut-grass*, a useless and troublesome grass in our gardens. I have seen no notice of it in the papers I take; and your drawing attention towards it might lead to some valuable information.

MANAGEMENT OF BEES. THE SUBTENDED HIVE.

[The following extract is from a neat pamphlet of 70 pages, which has recently issued from the press of Cincinnati, and for which we are indebted to the attention of its author, Thomas Affleck, esq., one of the editors of the Western Farmer and Gardener. This little treatise seems to be the work of a judicious observer. Its rules for practice are *reasonable*, because founded on the natural habits and propensities of the bees; and the directions seem well adapted to the ends in view, which are principally to guard the lives of the bees from their deadly enemy the moth, and their health from improper exposure to too great changes of temperature or worse effects of weather.—Ed. F. R.]

From Affleck's Bee-breeding in the West.

In adopting a plan for the keeping and management of bees, several important points must be considered. It must combine simplicity with convenience, and cheapness with durability. It must allow of the inmates proceeding in their own natural way; of the proprietor removing honey when it can be spared, without disturbing or injuring the bees. It must afford them, during winter, a warm and dry habitation; and in summer a cool and airy one. Its entrances must be so arranged, as to allow the bees a free passage, and yet enable them to defend themselves from enemies. It must afford, with a reasonable degree of care, complete protection against the moth; and facilities for putting two or more weak swarms together, where they come off late in the season. And it ought to give the proprietor control over his bees, as perfect as the nature of the insect will admit of.

All this, and more, can be attained by the use of the *subtended hive.* It is a simple and economical plan; of easy management; and one within the means of any farmer who can handle a saw, a plane and a hammer.

The boxes of which it is composed, are formed of good, well-seasoned pine plank—if possible, free from knots and wind-shakes. It ought to be at least one inch thick. The boxes may be ten, eleven or twelve inches square, [cubic space,] in the clear. Let the plank be dressed on each side, and jointed on the edges, so as to fit close, without being tongued and grooved. Before nailing them together at the sides, lay a thin strip of thick white lead paint on the edge to be nailed, which will render it impervious to the ovipositor of the moth. In the top cut two semicircular holes at the front, and two at the back, of one inch and a half in diameter—the straight side being in a line with the back and front of the box, so that the bees may have a straight road in their way from one story to the other. Put the top on without any layer of paint, using eight stout screw nails, that it may be taken off to facilitate the removal of the honey. Give the outside of the box two coats of white lead paint, all except the top; and let it be done so long before it is necessary to use it, as that the smell may be dissipated, as it is very offensive to the bees. Pour a little melted bees-wax, while pretty hot, over the inside of the top, which will enable the bees to attach their comb much more firmly. Let three-quarters of an inch of the thickness of the lower edges of the box in the inside be bevelled off, so as to leave but about one-fourth of an inch of surface to rest upon the stand—this will afford less shelter for the eggs of the moth.

We will suppose the boxes, thus made, to be a cube of twelve inches inside. In that case, the tunnel stand will be made thus. Take a piece of two inch pine plank, free from knots and shakes—what carpenter's term *clear stuff;* length 26, and breadth 18 inches. Ten inches from one end, and two from the other and from each side, is marked a square of fourteen inches. From the outside of this squate, the board is dressed off, with an even slope, until its thickness at the front edge is reduced to half an inch, and at the other three edges to about an inch. The square is then reduced to twelve inches, in the centre of which is bored an inch auger hole; to this hole the inner square is also gradually sloped to the depth of an inch; thus securing the bees from any possibility of wet lodging about their hive, and affording them free ventilation. There will then be a level, smooth strip of one inch in width, surrounding the square of twelve inches, on which to set the box or hive. Two inches from the front edge of the stand, commence cutting a channel two inches in width, and of such a depth as to carry it out, on an even slope, half way between the inner edge of the hive, and the ventilating hole in the centre. Over this, fit in a strip of wood as neatly as possible, dressing it down even with the slope of the stand, so as to leave a tunnel two inches in width by a quarter of an inch in depth. Under the centre hole, and over the outlet of the tunnel, hang small wire grates, the one to prevent the entrance of other insects; and the other to be thrown back to permit the exit of the bees, or fastened down to keep them at home in clear, sunshining days in winter. For feet to the stand, use four to five inch screw-nails, screwed in, from below, far enough to be firm. The lower side ought also to be planed smooth; and the whole should have two coats of white paint some time before it is wanted.

The apiary or bee-shed may be of a length adapted to the number of stands for which it is intended; and ought to be at least six feet in depth, and six feet in height at the back. It may be built in the cheapest manner, and yet combine, as represented in the frontispiece, economy and convenience, with neatness and taste. Locust posts, sunk in the ground, with rough plates and rafters, covered over-head with clapboards, and

behind with rough planks; the arches in front composed of crooked limbs; the inside and the back whitewashed with lime every spring; the front and ends covered with creepers, so trained as to be out of the way of the bees, and not so thick as to harbor insects; and the floor paved with brick, or laid with gravel, rolled firm, will be all that is necessary. A good, sound plank will be run lengthways of the shed, supported by stout legs, to answer as a bench on which to set the stands; and must allow of an alley, two and a half feet in width, behind it. The bee-shed may front in any direction—though it is best to protect it from the hot summer's sun; from the extreme cold of winter; and from the sudden thunder-gusts so common from the south-west in summer. An eastern or south-eastern exposure is preferable. Let it be so placed, as that the motions of the bees may be conveniently watched from the house, without having them in the way.

We will suppose that an individual, who wishes to keep bees, has provided himself with a few boxes and turnnel stands, during the winter; has erected his bee-shed, and is ready to purchase his parent hives. In this we will assist him, and also in the subsequent management during the season—premising, that the time, *as to dates*, must be regulated by his own observation: it will vary in different latitudes.

In the purchase of stock-hives, much care is necessary. It unfortunately happens, that in the west there is but little choice—almost all are indifferent alike. The proper season for purchasing, is in the fall, winter, or early spring. Select a hive as well made and as free from cracks and crevices as possible. Let the swarm contained in it be not more than two, or at farthest three years old. Examine the interior as carefully as practicable; if there is any appearance of bee-moths or their larvæ, reject it. But if it is pretty well filled with fresh-looking comb, the bee abundant and active, the box or gum tolerably sound, and the whole weighing, exclusive of the hive, over 20 or 25 pounds in the spring, you may safely purchase. As to price, that may be estimated according to the number of bees and probable weight of honey; and may rate for a good hive, at from four to ten dollars.

The greatest care must be exercised in removing it. The best way to do so, is to enclose the hive in a cloth, and let two men carry it, suspended to a pole. If the distance is great, it will have to be conveyed in a spring wagon, or on a sleigh; great care being used not to jar it. A very slight jolting will detach the comb, and throw he whole into ruins. Having got it home safe, place it where it is to stand, and if the box or gum is not in very good order, repair it as well as circumstances will permit, turning it up and removing all appearances of the moth, and cutting away the old, black empty comb. The bees will thus have some space afforded them, where they require and want it, and will throw off stronger swarms in consequence. Early in May, if the season be favorable, they will begin to throw off their first swarms—varying as to time in different locations. In the mean time, preparations ought to be made for their reception in the apiary; the hives and stands should be got ready, and a shelter erected; an open shed answering very well, so arranged as that they shall not be exposed to the full blaze of the hot summer's sun. A few trees in front, of a moderate growth, and trimmed up sufficiently to prevent the bees being entangled in the branches, in returning loaded to the hive, will be found of great assistance in swarming, as the bees will almost invariably settle on them, and remain from fifteen minutes to an hour, affording abundance of time for saving them, if the proprietor has every thing ready. But if they are allowed to go off a second time, there is little or no hope of saving them. All the noise usually made by beating tin-pans, ringing bells, etc., is perfectly useless; though it may sometimes happen, on a very clear, warm day, that they will show an unwillingness to settle, in which case they may be induced to do so, by casting a few ladles full of water amongst them, and even by firing a gun near—the concussion throwing them into confusion, and inducing them to settle. When they are all quiet, take a box, the holes in the top of which have been carefully plugged up, and after seeing that it is clean and sweet, shake or sweep the young swarm gently into it. The face and hands ought to be protected by a veil and gloves; for though bees are not inclined to sting when swarming, if gently handled, yet a chance-sting inflicted on a tender place, will discompose the most firm, and probably occasion twenty more—for it is well known, that the odor of the poison is very strong, and immediately perceptible to the bees, having a most irritating effect upon them. If the outsides of the box have not been painted sufficiently long to allow the smell of the oil to dissipate, it will be well to rub it over, inside and out, with some sweet herb, such as balm, or even with hickory leaves, which will make them better satisfied with their quarters.

A small table ought to be at hand, covered by a clean towel, on which to set the box, after the bees have been shaken into it, first placing a small stone or chip under one edge to allow them a free passage. If they settle in such a place as that the box can be firmly propped up over them, they will generally go into it without farther trouble—or if necessary, they may be gently swept into the box with a small wisp of a broom-corn, or a bunch of feathers. After they have been hived and placed in some secure situation, let them remain till evening, taking care not to leave them exposed to the full blaze of the sun, but shade them. They must be watched, until it is seen that the workers are coming and going as usual, for they sometimes go off, after they are to all appearance quiet.

In the cool of the evening, carry the hive to the apiary, and setting a clean tunnel-stand under it, place it where it is to reman—leaving a space of two feet between each stand.

It rarely occurs that a swarm fills a greater space than one cubic foot—if however, when a very large one comes off, they seem to be too crowded in the hive, add another box below, leaving the holes in the top open. If one box is found sufficient, let them remain in it; and in about ten days or two weeks, the state of affairs inside may be examined into, by gently lifting up one edge of the box, at daybreak, and if it be found that it is nearly filled with comb, immediately add the second one to it. This will generally be found needful.

Later in the season, it frequently occurs that

small, weak swarms are thrown off. These may either be returned to the parent hives, or strengthened by putting two or three together. To do this, place the one box under the other in the evening, leaving the communication open between them—shut down the grate over the tunnel-entrance; and burn a piece of leather for a few moments under the ventilator below, which will destroy that peculiarity of odor, by which the inmates of the different hives are enabled to distinguish each other; and will also completely disarm and confuse them, and prevent the possibility of a disturbance arising from the union. They will soon regulate matters amongst themselves, so as to become one family. If however there seems to be an unusual degree of excitement in the hive next morning, keep the grate shut down all day—if not, throw it open in the morning. It is much better to put even three swarms together, and thus form one strong one, than to have them in separate colonies, weak and inefficient. In fact, as a general rule, every swarm ought to fill a No. 1 hive, and require the addition of a second box, forming a No. 2, within ten or twelve days.

There are many good and sufficient reasons why this rule should be enforced, and the strength of each hive kept up. When a weak swarm comes off, and they are left, a mere handful in their hive, they rarely stay—but, seeming to feel their own weakness, and their exposure to enemies they abandon their new home and return to the other hives, leaving behind them a few thin flakes of comb. And if they do remain, it is almost impossible to protect them from the moth; whilst a strong hive is rarely invaded by that, or any other enemy.

The subtended hive renders the putting of two or three swarms together, a very simple process.

After carefully examining all the different plans recommended for defending bees from the inroads of the moth, and seeing them tried and trying them myself, I find that the only true and infallible preventives, are *care and neatness*. When it is considered, that during the whole summer, this active enemy is at work; that wherever there is a crack or a crevice, there she will insert her eggs; that there they hatch and become small, white worms; that these worms, as they travel along in the interior of the hive, spin a silken covering for their bodies—a sort of tunnel, within which they are perfectly safe from the attacks of the bees—their head, which alone is visible, being hard and horny; that if by any possibility they are dragged from this tunnel, they immediately, like the spider, suspend themselves by a silken thread, by which they can at any time return to their former quarters. When all these facts are taken into consideration, it will be seen at once, that if the moth is allowed a footing at all, it will retain it—and if so, the destruction of the hive is inevitable.

Let the apiarist have his stands and boxes well and carefully made; let him examine his bees, at least once a week; let his assistant lift up the hive from the stand, which must be removed, the lower edge of the box cleaned of every appearance of the moth, and of all filth, and immediately replaced where it stood before, on a clean, fresh tunnel-stand. Let the stand that was removed, be effectually cleaned, when it may be used to supply the place of the next one to be removed—and so on through the whole. The apiary or bee-shed must be kept clean and airy; should be whitewashed every spring; and if once or twice during the heat of summer, the bees were all gently removed some cool evening—the apiary covered up close with old carpets, &c., and a strong smoke from *tobacco* kept up in it for half an hour, every insect would be destroyed. The floor and shelves, &c. would require to be afterwards swept off clean and watered; the shed being left open till morning, for ventilation, and the removal of the odor of tobacco, before the bees were replaced, which they must be by sunrise next day. Every opportunity must be taken to destroy the moth when visible—either by hand or by placing during the evening, a bright lamp over a basin of water or soapsuds, in front of the apiary, which will attract them; and they will like all of this tribe of insects scorch their wings and perish.

Towards the latter end of August or early in September, the grand attack will be made on the drones ending in their complete destruction. No top-boxes should be removed until this takes place—though if much needed, they *may* be taken off. It is better, too, to let them remain in their place over winter until they are required, as there the honey will not become candied. Immediately after a box is removed, the holes in the top of the box on which it sat, must be neatly plugged up.

Bees ought not to be permitted to leave their hives until settled warm weather, in the spring; and until the first wild flowers come in bloom. We have frequently a few clear, warm days in the winter, when the bees, particularly if the stands face the south and are exposed to the sun's rays, will leave the hives and fly about. This should not be permitted—during such days, keep the grates shut down. They can gather no honey, nor be benefited in any way—many of them perish by being exposed to an occasional chilly blast, or become the prey of birds. Every bee, at this season of the year, is valuable.

If it becomes necessary to feed a weak swarm during winter or early spring—which may very soon be known by the weight of the hive—it must be done, by supplying them with a little honey in the comb; or syrup prepared by adding two quarts of water to one of honey, and boiling a few minutes, after adding a table-spoonful of salt—skim off all impurities, and after it has cooled, pour a little into a plate, over which lay a few twigs—raise the lower box, and place this on the stand, where the bees will quickly find it. Where honey or sugar is scarce, they may be fed with a syrup prepared from the sugar-beet, thus—after carefully washing the roots, grate them down, and press out the juice; to each gallon of this, add one tea-spoonful of sulphuric acid, (oil of vitriol,) three tea-spoonfuls of chalk or whiting, and one table-spoonful of salt—boil until all impurities are thrown off, and there will remain a fine syrup, on which bees will do well.

Every other day, instead of this syrup, they may be supplied with a little fresh, sweet corn meal, to which has been added about one-sixth of fine salt—sift the mixture on a plate, which place on the stand.

Humidity or dampness is always to be guarded against; bees suffer more from it than from cold.

On this account, snow should never be allowed to lodge round the hives. Nor ought the stands to be removed and cleaned during damp weather—though this must be attended to at least once a fortnight, all the year round, and more especially in winter.

The most simple and perfect cure for the effects of the poison from the sting of a bee, is to wet a piece of indigo and rub on the spot—this will immediately relieve the pain, if applied soon, and prevent the swelling. The juice of a raw onion is also said to be equally efficacious.

ON THE RELATION OF THE CONSTITUTION OF SOILS TO THEIR FERTILITY AND IMPROVEMENT.

To the Editor of the Farmers' Register.

Prospect Hill, (Ky.,) 17th June, 1841.

Nothing can be more important to the interest of agriculture, than a correct understanding of the means by which the natural fertility of soils may be preserved, and such as have been deteriorated by injudicious husbandry may be renovated. You have rendered a very important service to the most useful of all sciences, by your Essay on Calcareous Manures. I propose, in this letter, to make some desultory remarks upon the same subject; and shall be much gratified, if I shall be able to throw even the smallest light upon a question of so much interest.

Sir H. Davy, in his Agricultural Chemistry, says "the *earths*, and even the *earthy carbonates* have a certain degree of chemical attraction for many of the principles of vegetable and animal substances." That, "in most of the black and brown rich vegetable moulds the *earths* seem to be in combination with a peculiar *extractive matter*, afforded during decomposition of vegetables. In the the extract quoted by you, at page 30, he seems to place the chemical energy of alumina, and carbonate of lime, in preserving putrescent manures, upon an equality. I concur with you, that the powers of attracting and retaining these manures, possessed by these two earths, differ greatly in force. Taking for granted that carbonate of lime has a very powerful chemical energy, in attracting and retaining those elementary ry principles which are the appropriate food for plants, and that the other earths and earthy carbonates possess this power only in a slight degree, it will readily appear why soils destitute of lime, in any state of combination, "cannot be improved *durably* or *profitably* by putrescent manures, without previously making them calcareous."—*Essay on Calc. Man.*

In a state of nature, soils are enriched mainly by the decomposition of *vegetable matters* on the surface of the earth. If these were to undergo a rapid decomposition, a considerable proportion of the elements, constituting the appropriate food of plants, would escape in the form of gas, and consequently be entirely lost. And hence, if the growing vegetable had derived its nutriment altogether from the soil, it would *restore much less* than it had *extracted for its nourishment*; and would *exhaust* instead of *increasing its fertility*. But, in general, the decomposition of vegetable matter, on the surface of the earth, is so very slow and gradual, that but little loss occurs from that process. And as vegetables derive much of their nutriment from the atmosphere, the quantity of vegetable food restored to the earth, by their decomposition, commonly greatly exceeds that which has been drawn from the earth for their sustenance. In a state of nature the entire vegetable growth is left upon the soil. When this dies, and falls upon the earth, it becomes subject to the effects of dews and rain. These, before decomposition can take place, draw off from the vegetable matter *an extract*, which is thus carried down into the soil, and only the more fibrous parts remain on the surface to undergo slow decomposition. And this also, when converted into mould, gives out *an extract* to rain-water, and is thus carried down into the soil. Though that part of vegetable mould, which Berzelius terms *geine*, is directly but slightly soluble in water, yet it has been demonstrated by Th. de Saussure that the three constituent principles of vegetable mould "may be converted the one into the other, under the alternately preponderating influence of air and water." Thus *vegetable extract*, *carbonaceous mould* and *geine* may all, by the influence of air and water, be rendered soluble and be carried down into the earth. The *extract* of vegetable matter, mould and geine, which thus mingles with water and descends with it into the soil, is so slightly combined with it, that the earths and earthy carbonates, having a stronger attraction for it, will draw it off from the water and fix it in the soil. But these earths and earthy carbonates (if there be no lime present) will soon become *saturated*, and consequently can draw no more of these ingredients from the water. The quantity of food for vegetables *laid up in store, in the soil*, would seem to be limited to the amount which it is capable of retaining in a state of combination. This is not great when lime, in some form of combination, is not present, but very considerable when it forms a component part of the soil. Hence the great difference in the capability of improving by vegetable and putrescent manures soils which have and which have not lime as one of their ingredients, in some form of combination. When soils, destitute of lime in any state of combination, become completely *saturated* with those fertilizing elements which constitute the food of plants, it might be supposed the remainder would continue united with the water, by which they were carried down into the soil. This would be true if there were any chemical attraction in the earths *to fix and retain the water* in combination with them, until the vegetable food could be drawn off by the spongelets of the growing plants. But such is not the fact. Water will rise to the surface of the earth, whence it will be carried off by evaporation and the absorbing power of the atmosphere. But it cannot carry with it the vegetable extract with which it was combined. The experiments made by Sir H. Davy upon grasses, as detailed in his Agricultural Chemistry, show that the *extractive matter* is always left as a residuum, upon boiling the decoction. Although water may bring back to the surface of the earth such portions of the vegetabe extract as may not have been drawn from it by earths, having a stronger attraction for it than the water, yet it cannot be carried off by evaporation or absorption, and consequently it will be left at or near

the surface of the soil. This deposite of vegetable extract is one of the causes why vegetable mould is most abundant at and near the surface of soils, and assists in producing "the black and brown rich vegetable mould," in which Davy says "the earths seem to be in combination with a peculiar extractive matter afforded during the decomposition of vegetables." Hence there would seem to be a continual accumulation of geine and other vegetable matters at and near the surface, so long as the quantity of such matters furnished by decaying vegetation exceeds that which was consumed by the growing plants. In the course of time, this accumulation of vegetable matter, at the surface of the earth, would become very great if there were no means of carrying it off. In calcareous soils there is a chemical agency, which exerts great energy in retaining and confining this superabundance of vegetable food, so that the accumulation becomes very considerable. But in soils which are destitute of calcareous earth no such *considerable* accumulations are found. This is probably owing in part to the nature of the vegetable growth, which may be incapable of drawing much of its food from the atmosphere, and consequently the decaying vegetation may furnish no more vegetable matter to the soil than it drew from it for its own nourishment. But as exhausted lands, even in the poorest soil, when suffered to grow up in timber, are found to increase slowly in fertility, it follows as a necessary consequence, that in the course of time there would be a considerable accumulation of vegetable matter on the surface of the soil, unless some agency is at work to carry off the superabundance. What that agent is, and what are the best means of counteracting its effects, is an important inquiry. From the tenor of your 'Essay on Calcareous Manures,' it is obvious you suppose the effect is produced by certain vegetable acids neutralizing any lime which may formerly have composed one of the ingredients of the soil, and then combining with *geine* and other vegetable products, and thereby rendering them unfit for vegetable food for the more useful plants. If your views on this subject are correct, it would seem to follow that there is in fact no loss of vegetable food from the want of a soil to fix and retain it, but that it is only rendered inefficient in consequence of its combination with certain acids in the soil. And it would seem that, if it were all retained in combination with acids, by the application of a due proportion of carbonate of lime the accumulated food of plants would immediately become available, and the soil be restored to the highest degree of fertility of which it was capable. These views are very encouraging, and you have sustained them by such proofs and illustrations as to render them extremely probable.*

The recent discovery of *geine* or *humin*, and the acid found under certain circumstances by the combination of oxygen with this base, seems to prove that the existence of an acid in a soil is not *always prejudicial* to the growth of useful vegetation. Professor Rennie, as quoted in your essay, says, "humic acid, however, which I may remark is not sour to the taste, readily combines with many of the substances found in soils and manures, and not only renders them, but itself also, easy to be dissolved in water, which in their separate state could not take place. In this way humic acid will combine with *lime*, *potass* and *ammonia*, in the form of humates, and *the smallest portion of these* will render it soluble in water and fit to be taken up by the spongelets of the root fibres."

He farther remarks, "It appears to have been from ignorance of the important action of the humic acid in thus helping to dissolve earthy matters, that the older writers were so puzzled to discover how lime and potass got into plants." Professor Rennie says *humin* or (as called by Berzelius) *geine* is composed of carbon and hydrogen, and the addition of oxygen to this base to form *humic* or *geic acid*. This, I apprehend, can no more render it poisonous to plants than the addition of oxygen to carbon, thereby forming carbonic acid, can render that substance prejudicial to the growth of vegetation. This acid, so far from being prejudicial, is the principal source of the supply of food for vegetables from the atmosphere.

Berzelius says that "*the carbonaceous mould*, which changes a part of the air [atmosphere] into carbonic acid, is itself changed by the air into geine and into the extract of mould; and it is upon this transformation that appears to depend, in part, the advantages derived from the tillage of the soil, which is divided by the action of the

* The opinion expressed in the last passage we consider as sound and true within certain limits—but not to such extent as supposed by our correspondent. Vegetable matters, the remains of plants previously grown there, do, from several causes, greatly accumulate on naturally poor lands, left at rest, and especially on forest lands. But this accumulation has a limit, which is fixed in each case by the circumstances of the soil; and when that limit is reached, we infer that the value of all subsequent additions is lost, as regularly as received. Thus, we suppose that the common poor pine and whortleberry ridges of lower Virginia, which will scarcely produce more than 10 bushels of corn, in their new and best state, actually have at first vegetable manure enough to produce 25 or 30 bushels; and which vegetable manure might have been made useful, be fixed, and become permanent in the soil, simply by adding enough of calcareous manure, at or before clearing the land, and giving time for the two to combine together, and both with the soil. But no more than the supposed maximum of vegetable matter (in its various and progressive states of decomposition,) could remain *uncombined* with the poor soil; and if left for 1000 years without cultivation, we suppose that there would be not only no further increase of fertility, but also, in our warm and dry climate, no greater accumulation of vegetable matter. The excess would rot, and go off in gases, the final products of decomposition.

But, notwithstanding the exception stated, and others unnecessary to state here, the views presented by Judge Beatty are certainly correct, and such as we meant to maintain within very extensive limits; and so extensive as to afford as much *encouragement* to the improver of soil, as need be desired.—Ed. F. R.

plough and exposed to the immediate influence of the air."

Einhof has ascertained that *geine*, in acid soils, is combined with phosphoric and acetic acids; and De Pontin, it is said, has also found it combined with the malic acid. These authorities are abundantly sufficient to prove that *geine* is found in a state of combination with a variety of acids. Some of these combinations are found not to be prejudicial to vegetation of the most useful kind, but, in some of its combinations, it may only suit the growth of vegetables of an acid character, as you have shown in your Essay on Calcareous Manures. I have said that the *extract* of vegetable matter, combined with water in the earth, will remain behind, when the water is carried off by evaporation and absorption. The question then presents itself, can there be no loss of *vegetable extract*, or *geine*, except that which goes to supply the sustenance of growing vegetation? If there can be none, it would follow that, in a state of nature, where the natural growth is such as to give back to the soil more than is drawn from it for its nourishment, and where the land is sufficiently level to prevent a loss of soil by washing rains, there would be a constantly increasing accumulation of *geine and other vegetable matters*, so that the enriching process would be *ad infinitum*. But I apprehend we cannot rely upon the energy of even our best constituted soils to do thus much for us. There is probably a limit to the capacity of all soils in this respect. When this is supplied, the loss, in a state of nature, in supplying nutriment to the growing vegetation, and otherwise, is equal to the gain.

Dr. Peters, of Kentucky, in a very valuable article, published in the Kentucky Farmer of the 17th of April, 1841, speaking of vegetable mould and its solubility, says, "If this mould be washed with water, that fluid will dissolve a portion of it, and if the insoluble residue, after washing, called carbonaceous earth, by Berzelius, be exposed again to the air and moisture, for some time, it will be found again to yield soluble matter to water. This it continues to do until it is entirely washed away; but during the process of this change, it is also continually, although slowly, absorbing oxygen from the air, which combines with its elements, and passes off again in carbonic acid and water. In this manner it gradually disappears in soluble matters and gases and vapors."

If these views are correct, as I think they are, they strongly corroborate your opinion, that "the richest and the poorest soils each exerts strongly a force to retain as much fertility as nature gave them—and that, when worn and reduced, each may easily be restored to its original state, but cannot be raised higher, with either durability or profit, by putrescent manures, whether applied by the bounty of nature, or the industry of man."

There is a point, then, beyond which soils cannot be permanently enriched, without an improvement of their *constitutional organization*, which may be done by supplying those ingredients of a good soil which are deficient, such as clay, where sand is too predominant, and carbonate of lime, where that is deficient, &c.

But without a change in the constitutional organization of the soil, we cannot hope to carry its fertility, *permanently*, beyond what it had acquired in a state of nature. Soils which have been reduced by cultivation, where they have not been injured by washing rains, may be easily renovated. This must be done by again supplying them with those fertilizing ingredients of which they have been deprived by bad husbandry. This may be accomplished, in part, by the application of manures; but it is to the atmosphere we must look as the great storehouse whence we are to draw the necessary supply of vegetable food. To this end, those green crops should be freely cultivated, which derive most of their food from the atmosphere. In soils adapted to it, red clover is the most suitable for this purpose. It is by far the most convenient, and the cheapest method of renovating exhausted soils. It not only supplies a great deal of vegetable matter to soils that have been much reduced, but it is admirably calculated to pulverize, and reduce its component parts to a finely divided state, and thus to produce a condition favorable to a combination with those elementary principles which are furnished by the atmosphere; and also greatly increases its capacity for absorbing moisture. Care should be taken also to suffer as few weeds to ripen their seeds as possible. These, previous to the time of ripening their seeds, derive nearly the whole of their nutriment from the atmosphere. By destroying them before they seed, nearly their whole product of vegetable matter is a net gain to the soil. Exhausting grain crops should be sparingly cultivated till the soil is completely renovated, and then should bear only such a proportion to the green crops as the soil will bear without deterioration. It should be a fixed principle never to suffer the soil to *deteriorate*, for as it costs as much to cultivate a soil, producing only half or two-thirds of a crop, as if it produced a full crop, it is perfectly clear that it is the interest of the cultivator to keep his land always in good heart. Besides, it is less difficult to keep land in a state of fertility than to renovate it after it has been exhausted by careless husbandry. But it is time to bring my desultory speculations to a close. A. BEATTY.

ADDRESS TO THE HENRICO AGRICULTURAL SOCIETY, BY THE PRESIDENT, THE REV. JESSE H. TURNER. DELIVERED MAY 26, 1841.

(Published by request of the Executive Committee.)

Perhaps I ought, in courtesy, to return my grateful acknowledgments for the distinguished honor of having been appointed to make the address on the present occasion. But really, gentlemen, I must in candor say, that I regard it (all things considered) rather as a task than as an honor. If, however, you can use me to be of any benefit to this infant institution, I hereby tender may services to be employed in any manner you may think proper, provided you do not set me to writing essays. *I cannot write;* for unfortunately I labor under an insuperable inability, both mental and physical, in this respect.

Having premised this, I will observe that, in the course of my reading, I have met with a picture so beautiful and at the same time so appropriate to the present scene, that I cannot, without violence to my feelings, refrain from introducing it here. It is in these words—"That

our sons may be as plants grown up in their youth; that our daughters may be as corner-stones polished after the similitude of a palace; that our garners may be full, affording all manner of store; that our sheep may bring forth thousands and tens of thousands in our streets; that our oxen may be strong to labor; that there be no breaking in nor going out; that there be no complaining in our streets. Happy is that people that is in such a case." If this beautiful picture could be realized, then should we obtain what we all so devoutly wish for—*peace and plenty.*

I will not disguise the fact, gentlemen, that this lovely picture is taken from the Bible; nor is this the only passage, by many thousands, in which the loveliness of rural scenery is depicted, in the same good old book. But from the fact that I have quoted from the Bible, and especially as I wear a black coat, perhaps some of you may think, that I intend to preach a sermon. But be not alarmed, gentlemen. I intend no sermon, nor any other theological lecture of any kind, but a simple, plain address, adapted to this first meeting of our Agricultural and Horticultural Society. Indeed, were I to take a text, there is another that would suit me much better. In former days—those days when temperance societies did not exist, there lived a brother black coat, who had unfortunately contracted a great fondness for the forbidden creature. He continued, however, to exercise the functions of his office, and concluded all his sermons with these emphatic words—"Brethren, don't do as I do, but do as I tell you." Yes! this shall be my text. It suits me exactly, for on it I can preach just such an agricultural sermon as I think proper, and none of you can charge me with departing from my text.

With this motto in view, then, I propose to describe, in a very summary manner, what I conceive to be a well managed, a well regulated farm. In doing this, I intend to use the plainest, the simplest language of which I am capable. I intend to call things, not by their botanical or scientific names, but by the very names that farmers call them; nor will I attempt to appear learned at the expense of being misunderstood. What then is a well managed farm? Here I am sorry to say that I must depend for my picture, more on fancy than on the reality. If such a farm does actually exist, I have never yet seen it. I am sure you will agree with me, that it exists no where within the limits of our Society. That which comes nearest to it of any I have seen, is a farm in Charles City county, called Weyanoke, the property of the late Fielding Lewis, Esq. where a neatness and system pervaded the whole, which I have seen equalled in no other instance.

But to the answer. A well regulated farm is a portion of land with its enclosures, and buildings, and shelters, and resources for enriching itself, and stock and farming utensils, and a great many other things which I cannot enumerate—all so arranged, and all kept in such order as actually to answer the purpose for which they were intended. Now let us apply this simple rule to any particular case. What use do you wish to make of your land? All will agree that it is to furnish bread and vegetables and all other necessaries for the family, together with as large a surplus as possible to be disposed of at market: and yet this farm must not only maintain its own, but be in a state of continual improvement. When, therefore, I see a farm producing *largely* the above articles—when I see the corn and other crops free from grass, and during their growth exhibiting that dark luxuriant color on which the eye of the experienced farmer dwells with so much delight—and when at harvest, I see the ears large and full and so heavy as to be borne down by their own weight; then I say, that as far as the *land* is concerned, here is a well managed, a well cultivated farm.

Now it is obvious, gentlemen, that this beautiful state of things cannot exist on lands, which are poor by nature or poor by exhaustion, or on which superfluous waters are permitted to stagnate. You never saw, nor will you ever see, the rich luxuriant hue on the impoverished or excessively wet lands. There the growth is slender and the color a sickly yellow. If, therefore, your lands are poor—the remedy is a plain one—enrich them—if they are too wet, drain them. But some one will say—why preach to us about these defects in land? Is none of your land poor? Is none too wet? Ah! you forget my text—I will remind you of it—*Don't do as I do—do as I tell you.*

Again. This farm, however rich and well drained and well tilled, requires enclosures, or all the labor will be lost. And here permit me to remark, that I consider our whole enclosing system as fundamentally wrong. On my small farm I have had to incur an expense of many hundred dollars—certainly more than a thousand, in erecting enclosures. And why all this expense? It is not to restrain my own cattle, for this I could do for less than fifty dollars. It is to prevent the depredations of my neighbor's stock, and my neighbor has to bear a similar heavy expense to protect himself from the depredations of my stock. Now the simple remedy in this case is, to compel every man to restrain his own stock, and this he could do at an expense bearing a very small proportion to what it requires to prevent the ravages of the roaming stock of his neighbors.

And here it is an object of curious inquiry, why has not a remedy so effectual, so obvious, and at the same time so simple, been already employed? The answer is a very plain one. Our whole system of legislation is wrong, and therefore, our whole enclosing system, and road system, and taxation system is wrong also. The evil complained of arises from this—that the very men on whose shoulders rest nearly the whole support and expense of the government, have very little to do in forming the government. Who is it, for instance, that is sent to fill our legislative hall? Who is it that makes long speeches day after day and time after time about the man in the moon and other subjects of equal importance? Who is it that, in this way, protracts the meetings of our legislature until every body is literally wearied out with them? Who is it that, for their own amusement or their own vanity, will continue to spout forth speech after speech, each of which they know costs the state a thousand dollars or more, and that, too, when every man's mind is fully made up? I

will not, gentlemen, tell you who it is—I will tell you who it is *not*—it is not the plain matter-of-fact farmer. Think you that our honest farmers would spend a whole week, and incur an expense of not less than ten thousand dollars in debating the question, whether they ought to comply with a plain requisition of the Constitution? or that they would squander away our money in settling the federal relations of our country? You all indignantly answer no! Their plain sense would at once dive to the bottom of the matter and suggest the proper remedy.

The truth is, the plain, substantial farmers of our country have not that weight of influence to which they are justly entitled. Except in the spring, when an election is coming on, they are considered as the menials and serfs of the country. *Then* they are, as if by some magic influence, at once changed into the lords of creation, and those very men, who were all the winter long squandering away their money, are seen bowing, and fawning, and cringing before them as their lords and masters. Here, gentlemen, is an acknowledged great evil, and the remedy is in your hands. Look out among yourselves for some honest, substantial farmer of strong mind and plain good sense, who will not make long and repeated speeches, but will at once see what the good of our country requires to be done, and will immediately do it, and that is the man for us. But is the farmer in reality that poor, degraded thing which many suppose him to be? fit only to drive an ox-cart or to hoe a row of corn? Or does our country itself regard him as this low grovelling creature? Who is it that by his industry and enterprise not only supports himself, but furnishes that large surplus needed by the mechanic, the manufacturer, the merchant, the lawyer, and the whole class of our non-producing population? It is the farmer. Who is it that pays by far the largest proportion of taxes into our treasury, and thus supports our government? It is the farmer. Who is it that controls the elective franchise of our country? It is the farmer. And who is it that buckles on his armor, when his country is invaded, and goes to her rescue? It is again the farmer. If then this be the relative strength of the farmer, why should not his influence be felt? Yes! I do feel a sincere respect for the substantial farmer. He may wear a rough coat, but it conceals a strong body and a noble soul within—he may have a rough hand, but it is a generous one—he may have a brawny arm but it is nerved with strength for his country's glory.

You will, I hope, pardon this digression, when I tell you that I had a distinct object in making it. It is to rouse you, as individuals, and especially as an agricultural society, to the great and growing evils among us, and among these, that which relates to our enclosing system is by no means the least. The remedy is to turn out from our halls of legislation our speech-making members, and to put plain, business farmers in their places. When, therefore, you see it announced in the public prints, that at 12 o'clock, Mr. A. B. commenced his speech, and having continued till 4 o'clock without coming to a conclusion, yielded the floor to a motion to adjourn; mark that man, and be sure the next year "*to elect him to stay at home.*"

The last legislature were in session 112 days, and spent, I am told, $75,000 of our money. And what did they do? Why I will tell you some of the choice things that they did. They made, in the first place, a great many and very long *speeches*, very much, no doubt, to their own edification and gratification. That was one very important thing they did. Another was—they made one of the very best governors we have ever had, resign his office—and then, hoping that the people would send them back next winter, and knowing that if they did so, they would need a good deal more of our money, they raised our taxes. And now to crown the whole—as their *chef-d'œuvre*—their highest effort, I will tell you what they did. It is known to most of you, that there went from this society a respectful memorial to the said legislature, to establish a state board of agriculture. And what do you think they did with it? Why they did actually, gentlemen, in their great condescension, give their formal and solemn permit to a certain number of gentlemen, who might think proper, to come to Richmond once every year, *at their own expense*, and call themselves the state board of agriculture!!! Some of us are so stupid as to think, that we might have done the same thing without the solemnity of their permit. Now was not this act alone worth the $75,000? And I am told that our worthy representative had to use the most strenuous exertions, to get the act passed even in this form.

There is another subject connected with abuses in which we farmers have a deep interest, to which I beg leave briefly to call your attention. This relates to the extremely deranged state of our currency at the present time. And here I am fully aware that this, together with almost every subject, has been dragged into that political strife, which has so much disturbed our country for a considerable time past. But I wish it to be distinctly understood, that I shall treat this subject not as a politician, but as a plain farmer. On this day—a day in our society sacred to agriculture and its pleasures, as our own Jefferson has expressed it—"We are all federalists—all republicans." I do most cordially approve of that article in our constitution, which prohibits the agitation of any political subject at any of our meetings. I do not aspire to the honor of a politician at any time; much less would I do or say any thing to disturb the harmony of this joyous scene. I, therefore, on election days, and on other suitable occasions, I declare and declare plainly who and what I am, I shall studiously keep it out of view on this occasion. To-day I am a *farmer*, but as a farmer, I have a deep interest in the currency of the country.

My attention was recently called to this subject by an incident which I beg leave to detail. I lately had occasion to procure a draft to pay for some northern stock. It was not bank stock, gentlemen, but *hog* stock, Berkshire hog stock. I went to my bank to get it—I call that my bank where I do my little business. The proper officer informed me that I could not get it; but added, try at the other banks, and if you fail there, I will accommodate you. The word *accommodate* made a strong impression upon me, and I went away congratulating myself in having secured the kindness of the man of the

bank. My application at the other banks was a fruitless one: so I came back again, and the draft was made out in due form and handed to me for my inspection. But what do you think was the character of it? It was to be paid not in specie, but in current notes, and so expressed on the very face of it. Now let it be borne in mind that I paid for it in the very same article—current notes—and that too at a premium of 4½ per cent. Now I can readily understand why a silver dollar should be worth more, under some circumstances, than a paper dollar; but I cannot understand why a current note in New York, neither of which will command any pay, should be worth more than a current note in Richmond. Merchants may understand this, but I cannot. The fact is, that on this little transaction, amounting to only $250, I lost $11 25, and the bank made it—and this they call accommodation. The truth is, it took one of my best loads of hay to pay for this accommodation. A few more such accommodations would reduce me to the same condition in which the banks are—they would ruin me. Now here is a grievance—a great and palpable grievance, which has taken $11 25 from the pocket of me, an obscure farmer, not engaged in any trade, by which I might *cheat* as much from some other person, and it has gone into the coffers of one of the great moneyed institutions of our state. Nor is this the only case in which we lose. We lose constantly in every instance in which a depreciated currency is concerned. To make this plain, I will state a case which occurs every day and every hour in the day. The farmer brings his corn, his wheat, his tobacco, and what not, to market, and sells it and gets his pay in bank notes: and if the price be a good one, he feels very well satisfied. But why is he satisfied? Because with these same notes, he goes to the merchant and there buys a coat, for himself, and a gown for his wife, and a fine bonnet with a pretty riband on it for his daughter, and perhaps a gun for his son. Now all this is well enough, till we examine into it a little more carefully, and when we do, we shall find that the merchant paid for these things in a depreciated currency—consequently a loss has been sustained. And the question is, on whom will it fall? Now, every body acquainted with merchants at all, knows that they are not such fools as to let it come upon them. Of course it falls on the consumer. The coat, the gown, the bonnet, and the gun, turn out, therefore, to be a losing business.

Now here is a grievance, a great and sore grievance—and what is the remedy? I remember some years ago, whilst the United States Bank was in existence, I had occasion to transmit some money from this point to Cincinnati, in Ohio. I went to the branch bank in this city and readily obtained a draft for the sum wanted, for which I paid 25 cents on the $100. Now let it be understood, that I have nothing to do with that bank in a political point of view. Whether such an institution is constitutional or not, I pretend not to say. At the same time, when Washington and Madison, and the Supreme Court of the United States say that it is constitutional, I must think that it comes pretty near to it. But this much I can say, I found that bank a very convenient thing. You may stigmatize it as the monster—you may call it Biddle's bank, or what you please; but the bank which equalizes the currency, the bank which makes my dollar here equal to another man's dollar in any other place all over the world, is the bank for farmers. If this bank had been in existence, I should not have lost $11 25 on my hog stock.*

* Mr. Turner here has fallen into a very common error. It was not because the bank he refers to was a *United States bank*, but because it was then a *specie-paying bank*, that it could sell exchange on another specie-paying bank so low. If the United States Bank at that time had paid only in irredeemable paper, as the Virginia banks have long done and do now, both the depreciation of its notes and the price of exchange for specie would have been *nearly* as great. And if our state banks now, and had all along, honestly and fully paid specie, the price of exchange between the most remote cities of the union would be (without the aid or existence of a United States' bank) so small as not to be worth consideration. The business of a publisher of a periodical, having circulation among many distant and widely scattered subscribers, probably suffers more than any other by the depreciation of paper money; and of the evil and loss we have ample and almost ruinous experience. Yet if the state banks merely paid specie, we should never lose more than 25 cents discount on any $5 note sent from the remotest parts. The late United States Bank barely missed stopping payment in 1819 and 1825—and both the first and the second national banks would certainly have stopped within three years, if their charters had not ended sooner. And in that case, Mr. Turner would have found their notes just as worthless as he, most justly and truly, estimates the value of the dishonored notes of our irresponsible and lawless state banks.

Like Mr. Turner, *we* speak of a United States Bank merely in reference to the claim of its being a convenience and facility to the community, and especially to the agricultural community. We here consider the institution merely as bearing on agricultural interests. We will not even name a political objection, nor allude to constitutional difficulties. And, if omitting all these latter considerations, then there is one ground of preference which we entertain and readily admit for a United States bank, to the state banks operating without any such national or controlling institution. Our preference in this case is exactly that felt by Baillie Macwheeble for paying a heavy black-mail to the highland chieftain, Fergus McIvor, rather than be exposed to the more continually harassing and unregulated petty pilferings of the numerous caterans and thieves under his control. If the only choice of the agricultural interest is to be either at the mercy of a thousand fraudulent and plundering state banks, privileged by law and custom to cheat and rob almost at discretion, and without penalty, or to the same army of petty thieves of corporations, partially restrained and controlled by a supreme chief of banking robbers, in the character of a United States bank, then we

I have another strong objection to banks, as at present conducted. It seems to me that our state legislature, together with a large portion of our citizens, are completely sold to them. It certainly argues very badly for the morality of an individual to refuse to pay his debts, and for a great moneyed institution to do the same thing is a much greater enormity. Now let the banks do what they may, our legislature and a great portion of the people are ready to sustain them in it. Some time ago, our banks got into difficulty, and to use their own language, suspended specie payments, (I have often wondered why they use the term, *specie* payments, for it is well known that no other payment is worth a button.) Well, they suspended, that is, in plain English, they refused to pay their debts. Now suppose that I or one of you, gentlemen, should do the same thing! Why the strong arm of the law would immediately take hold of us and compel us, and with the loss of property, we should lose our characters also. But what is the fact in the case of the banks? Why the legislature is immediately convened, and their illegal act is made a legal one. At length, after taking their own time for it, they undertake to resume. And what sort of a resumption is it? I call it a mere mockery. In one short month, taking care in the mean time to place their notes at such distant points, that nobody could avail themselves of the promised payment, they suspend again. And the general wish, so far as I know, is that their present suspension may be a final one.

Here then, gentlemen, is a most formidable array of evils under which we farmers, that is, we the *people*, labor. We elect men and send them to the legislature to do our business; and instead of doing it, they get engaged in squabbles of party strife; and there make long speeches, and there squander away our money, until tired of the game, they break up and go home, and have the impudence to offer again; and we have no more sense than to elect many of them. We incorporate certain moneyed institutions, and give them certain privileges, in consideration of which, we expect them to study our convenience, and to give us a sound currency, and to furnish the means by which we may transmit our funds from one point to another, and that without loss. But what is the fact? Instead of a sound currency, they give us a dishonored currency, and if we get any draft at all we get it with the loss of our bread. Now what is the remedy for these great and sore evils? The best and safest cure, as I think, is in agricultural societies. The plan is simply this. Let there be an agricultural society in every county in the state: let one feeling, one spirit pervade the whole: let there be a close and intimate correspondence kept up between all the parts: let us, by means of our orators and missionaries, keep up a constant excitement on this subject; and then, my word for it, *our servants* will no longer aspire to be our masters—and when we depute members of the Legislature to do our business, they will do it—and when we incorporate banks to study our convenience, they will do it also. The servant is very apt to become lazy or insolent, unless the eye of the master is kept upon him. And this, I would observe, is the very place to commence this thing. We occupy the metropolis of the state and its neighborhood, and our local position gives us a commanding influence, which we are criminal if we fail to improve.

(*To be continued.*)

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would not hesitate to prefer the latter infliction to the former. But, in the mean time, and until all hope of relief or remedy has entirely vanished, we individually will struggle to defend our property and rights from the depredations of both the greater and the smaller plunderers.—Ed. F. R.

HUSSEY'S REAPER.

To the Editor of the Farmers' Register.

Agreeably to the arrangement made between Mr. Hussey and yourself, with a view of testing the merits of his reaping machines fully in a long harvest, he made his appearance here on the 27th ult., having been preceded some days by two of his reapers, one of either sort; and having received due notice of the probable time of our commencing that interesting operation to the farmer, the securing of our crop of wheat. He accordingly put them in operation the next day, but from the unskilfulness of the hands, and from the horses not being accustomed to the work, and probably from the greater friction in using new machines, the work was so badly done, and the loss of time so great, that I more than once regretted having given my consent to make trial of them here. It is proper to observe that the first day the experiment was made on ten-foot beds, where the furrows were quite deep; and in crossing the beds the horses were a good deal jostled, and in going with the beds, or diagonally across them, as was done over part of the ground, the wheels occasionally would run into the furrows, and in both cases the machines were prevented from operating successfully. The next day they continued to work on the same unfavorable ground, and though there was a manifest improvement in the work done, and in the quantity of it, I was still very much dissatisfied. The third day, however, we removed them to a more favorable site, where the beds were wide, the furrows shallow, and the wheat heavy, and I very soon became convinced that Mr. Hussey's reaper did not deserve to be classed with the humbugs of the day. By this time the horses and hands employed had become better trained, and the work was beautifully done—better indeed than I ever saw done by the most expert cradler and binder, "with every appliance and means to boot" to enable them to do the work well. Less wheat was left on the ground traversed by the machines, either standing or cut, than I ever observed in any wheat field before.

I wish I could speak as strongly in favor of the reaper as a time-saving machine, but the truth obliges me to say that I cannot. Still I think that it will save time; but the question is, how much? A very difficult question it is, too, and by no means so easily solved as might at the first glance be imagined. Indeed so much depends on the locality, the length of the rows and the heaviness of the crop, (the reaper operating to most advantage in heavy wheat,) that the time saved is con-

stantly varying; and to approximate the truth, therefore, is as much as can be expected. Something, indeed, a good deal, depends upon the fact, whether good cradlers have to be stopped in order to run the machine; good policy, however, would always suggest the propriety of stopping the worst.

It is not enough to ascertain the number of binders required to run the machine, in order to determine precisely the time saved. Say 8 hands are required for this purpose in heavy wheat, and where the rows are pretty long, and such situations are the most favorable to the reaper, and six where the wheat is lightest and the rows short, and a good deal of time consequently lost in turning. Are six cradlers saved in the former case, and four in the latter, estimating the driver and raker, who ought to be good and efficient hands, as of equal value with cradlers? Certainly not; and for this reason. The reaper cannot be started as long as there is any dew on the wheat in the morning, nor can it operate after much has fallen in the evening. At such times the hands that attend the machine have to be employed in some other way; and moving from one kind of work to another is always attended with more or less loss of time. Nor is this all. In shocking wheat after the machine, some loss of time is also incurred. Where we use the cradles, the binders follow immediately behind them, and then come the pickers-up, followed by the shockers, and the whole work goes on together. The reaper, however, when operating in long rows, as it must do to work to advantage, scatters the work so much, leaving it in long narrow strings, that shockers cannot find constant employment in following it. We have found it necessary, therefore, to stop a part of our cradles, once a day, in order to bring up the shocking after the machines, which certainly occasions some loss of time. Still I think on the whole that the securing of our crop has been somewhat expedited by the use of these machines; and if binders could have been hired to operate them, without stopping the cradles for the purpose, our harvest would have been very materially shortened; and the loss of wheat would unquestionably have been much less.

It would add greatly to the value of these machines, if the ingenious inventor, Mr. Hussey, could devise some way to make them cut damp straw; so that they might be kept at work all day. Whatever Mr. Hussey has not accomplished, however, is, I am sure, owing to the intrinsic difficulty of making the improvement desired; for the wonder with me is not that he has achieved no more, but that he has done so much.

The reaper compares most advantageously with cradles in cutting heavy wheat that stands well, cutting it quite as rapidly as it would a lighter crop, which the cradles would not do; or in cutting fallow wheat that inclines altogether one way. The fallow wheat, however, must be cut the way it inclines, the knife going under it, and it is laid beautifully, as it falls from the machine, for the binders; but the machine must go back without cutting. I am not of opinion that the reaper will answer in all situations, or will even supersede the use of the cradle altogether; but I incline to think that it may be used to great advantage in securing parts of almost every large crop; at least on level land.

After timing these machines repeatedly, I have not been as yet able to get either of them to cut more than an acre per hour, and, by the way, that is quite expeditious work in heavy wheat. Before trying the reaper, I had supposed that good scythemen would average more than 2 acres a day in good wheat, but I am now convinced that this is quite as much as can be done. My overseer, Mr. Adams, who superintended the machines, and is quite a judicious man, entertains the belief that $1\frac{1}{2}$ acres might be accomplished by the reaper in an hour, with fast horses and superior driving. It is probable, too, that the experience of another season might enable us to effect more than we have yet done. But still I doubt if an acre and a half an hour can ever be counted on for many consecutive hours.

An observant gentleman of Charles City, and a practical farmer too, who has one of these machines which he worked last year, informed me recently that it would cut down sixteen acres of wheat a day, or would do the work of eight cradles. The testimony of this gentleman is every way entitled to credit, and justice to Mr. Hussey seems to require that it should be mentioned. I presume of course that some allowance was made for the time lost in the morning and evening, when the straw was damp.

In removing the machines, we employed for the most part the same horses and hands. When they can be conveniently changed, so as to lose no time in feeding, the amount of work will no doubt be much greater; as full two hours are allowed at dinner time in harvest. When this plan is adopted, the horses and hands intended to work the latter half of the day, must be fed only.

I have heretofore mentioned that the two machines sent me by Mr. Hussey are of different kinds. The one has two large wheels and the other one, and I give a decided preference to the former. It is an easier draught and performs better in every respect.

Before taking leave of the subject, I would respectfully suggest to those who are making trial of these machines for the first time, that they ought not to be disheartened, if they fail to perform very perfectly for the first day or two. Whatever difference of opinion may exist in regard to their saving time, there certainly can be none as to the very superior style, in which they save wheat, when properly managed.

With regard to the durability of these machines, I can say no more than that neither gave out during our harvest, and that they are to appearance quite strong.

WM. B. HARRISON.

Brandon, July 12th, 1841.

ANOTHER TRIAL OF THE REAPING MACHINE.

[In addition to the foregoing statement, we are gratified to add the following, from Robert B. Bolling, esq., who, at our request, and through our arrangement with Mr. Hussey, made a separate trial on his Sandy Point estate. The intention to make this trial would have been announced at the same time with that of Mr. Harrison (in No. 5) but that the arrangement had not then been com-

pleted. Both these trials were undertaken at our request, and we are confident that both the individuals used every care to have full and fair trials made, and the facts and the results accurately noted. It is unnecessary to add that no where could such confidence be better placed.—ED. FAR. REG.]

To the Editor of the Farmers' Register.

Sandy Point, July 23d, 1841.

The wheat reaping machine of Mr. Obed Hussey, which the inventor was to accompany and put into operation, did not, owing to his previous engagement, reach me until I had nearly completed my harvest. I had not therefore as good an opportunity as I desired to test its efficiency, and to ascertain with accuracy the actual amount of manual labor that the machine would be equal to. From the very short trial which I made of it, however, I feel satisfied that the principle is a good one, and may be successfully applied to the object intended, and that the machine is destined, when the inventor shall have better perfected its mechanical arrangements, which he can with his greater experience easily do, to be an invaluable acquisition to the the farmers of the wheat-growing region of country. With three mules, a man to drive and one on the machine to rake the wheat from the platform upon which, as it is cut, it falls, we estimated that rather more than one acrè per hour was reaped. By Mr. Hussey's calculation the machine must cut one acre, in every two miles which it travels through the wheat; 15 acres therefore by this calculation may be reaped in a day with one machine, pulled by three mules with two men only to drive and rake, by travelling thirty miles, a distance not too great on level land, through large fields, where there would be but few turns. The cutting of the machine where the wheat was rankest was the best, leaving not a straw scarcely standing after it, and rendering gleaning entirely unnecessary. The wheat for the "pickers up," or binders, was deposited more evenly and in much larger quantities together, than after the cradle, and with these advantages to the pickers up, eight were not always able, when the wheat was rank and abundant, to gather, tie and remove the sheaves from the track of the machine, as it passed around the square. The machine does not cut well early in the morning, when the wheat is moist; it cuts best where and when a cradler would do least—in rank wheat and in the hottest period of the day. I have concluded to procure two for the next harvest, satisfied that much manual labor thereby may be saved, at a critical and important season to the farmer, when labor is always scarce, and especially on the lower James River at that time. I am, very respectfully, yours, &c. R. B. BOLLING.

GARLIC.

From the Farmers' Cabinet.

Mr. Editor—I have been a careful reader of your valuable and interesting paper for some time past, and have been much gratified to find therein the productions of so many able writers on many subjects of much importance; but there is one subject on which I do not recollect ever having seen any thing published in the Cabinet. I mean in relation to that noxious plant, *garlic*, as to the best mode of conducting a rotation of crops on a garlicky farm, so as to be the most profitable to the agriculturist, and at the same time keeping the growth of it under, in such a manner as to prevent one being annoyed with it in the grain.

I will here mention a system which I have found to be the best calculated to retard its growth: it is, to plough it under early in the spring, thereby preventing it from growing during the following summer, which causes much of it to decay; and I am inclined to think that all that had come to maturity dies, by being ploughed under at that season, but inasmuch as the earth is filled with its seeds, there is great difficulty in exterminating it entirely. The best course, then, is to plough it under late in the fall or early in the spring, and cultivate the land in corn the following summer; then plough it again the following spring, and seed it with oats or any other summer crop; manure it in the fall, and seed it with wheat, and in the spring following sow clover on it. This mode enables me to realize a crop of corn, a crop of oats, a crop of wheat, and a crop of clover, all without garlic; and by letting the land remain only one year in clover, I generally can have another crop of wheat without much garlic; but afterwards it generally comes thick again. Now, as my principal object in view is, to elicit information on the best mode to exterminate it *entirely*, I conclude by hoping that some of your able correspondents will oblige us with instructions how to cultivate garlicky lands so as to *exterminate* the noxious plant, or to keep its growth under, and enable us to cultivate our lands profitably. A PRACTICAL FARMER.

LOCALITY OF THE CANKER WORM.

From the New Genesee Farmer.

The Nashville Agriculturist (as quoted in an exchange paper) recommends taking up the earth round fruit trees to the depth of six or eight inches, and to the distance of eight or ten inches, for the purpose of burning it, in order "to destroy the germ of the canker worm." Is the canker worm an inhabitant of Tennessee? Perhaps some of our readers can inform us in regard to this particular; and also the boundaries of that district on which the genuine canker worm (*Phalena vernata*) is found.

Deane, in his New England Farmer or Georgical Dictionary, says, "It is not less than about fifty years since this insect began its depredations in New England, in the parts which had been longest cultivated. But perhaps there is some reason to hope that Providence is about to extirpate them: for a little bird has lately made its appearance in some parts of the country, which feeds upon the canker worms. Should these birds have rapid increase, the insect will be thinned, so as to be less formidable, if not wholly destroyed.

The second edition of that work was issued in 1797, "*soon* after the first," and perhaps we may set the time of their first appearance about one hundred years ago. It will be safe to conclude they were not newly created about that time, however; and we may ask whence they came?

or what other tree supplied them with food before that period?

The little bird was doubtless the cedar bird—one of the greatest marauders of our land; but having no canker worms for him to feed on in this district, we should be glad to send him where he might find useful employment.

For the Farmers' Register.

AGRICULTURAL STATISTICS—FURNISHED IN CONNEXION WITH THE LATE CENSUS OF THE UNITED STATES.

A document has been published, as emanating from an official source, purporting to exhibit the agricultural statistics of the United States, which is so grossly and palpably erroneous as to reflect great discredit on the department that allowed it to go before the public. It has been already noticed in the Petersburg Intelligencer, and that it may not mislead those who may be in the habit of adopting official statements without examination, we will point out some of the grossest blunders which the table exhibits.

The article of hemp and flax is among the most conspicuous.

New Hampshire is stated to produce	53.040	tons.
Massachusetts - - - - -	23.132	"
New Jersey - - - - -	33,170	"
Pennsylvania - - - - -	170,760	"
Virginia - - - - - -	92,123	"
Ohio - - - - - -	252,520	"
Tennessee - - - - - -	45,053	"
Missouri - - - - - -	20,071	"
Indiana - - - - - -	97,657	"
Illinois - - - - - -	50,326	"

And the total product of the United States is put down at 843,049 tons! and 148,224 pounds. It may be safely questioned whether the whole world produces any thing near this quantity, and whether the United States produces more than the smallest quantity above enumerated. It must be observed that Kentucky, the only state that grows much hemp, is omitted.

Hay is another of the incredible products stated.

New York is stated to produce	3,160,916	tons.
Pennsylvania - - - -	1,199,963	"
Ohio - - - - - -	1,024,803	"
Maine - - - - - -	691,058	"
Vermont - - - - - -	734,047	"
Massachusetts - - - -	569,425	"

Aggregate, 9,641,225 tons! Is this probable, or possible?

Of tobacco Tennessee is stated to produce 26,542,448 pounds, and Virginia only 14,157,841 pounds, or about 11,000 hhds., when her annual inspections are 45,000 to 58,000 hhds., in which, we admit, is included a considerable portion grown in North Carolina. The total product of tobacco is stated at 78,070,803 pounds, which is much below the mark, as the inspections of Virginia in 1840 (when the census was taken) were 58,000 hhds., weighing nearly or quite 78,000,000 lbs., exclusive of a large quantity manufactured and not inspected; the inspection at New Orleans, is 41,000 hhds., (but we admit that Kentucky has made no return,) and in Baltimore, 40,000 hhds.

Virginia is said to produce 10,767,451 lbs. of cotton, equal to about 30,000 bales, or more than double her actual product, for a large portion of the 25,000 bales she receives is grown in North Carolina. In the report it is noted that some of the returns are in seed, others in ginned cotton, but as the quantity of each is not distinguished, the table, if otherwise correct, is valueless. The aggregate of cotton is 1,064,560,785 lbs., which, at an average of 400 lbs. per bale, is equal to 2,661,400 bales, or 461,000 bales more than the largest crop ever made, and 861,000 more than a full average crop.

The whole quantity of sugar made in the United States, according to this extraordinary document, is 281.265.116 lbs.! of which New York produced 10,093,991 lbs. *on paper!* and Louisiana 249,937,720 lbs.! or, in fewer figures, 250,000 hhds., or 200,000 hhds. more than the planters brought to market.

Louisiana is the only state in the table, that produces any considerable quantity of pitch, tar, turpentine and rosin, say 12,233 barrels! We presume they are produced from some other tree than the pine. Total of the United States 31,689 barrels. North Carolina has omitted to furnish her claim to this, (her great staple,) or to any other product; so have Kentucky, Michigan and Florida.

Of silk (cocoons) the table shows a product of 328,482 lbs.; of which Pennsylvania claims 278,939. The error in this item is too obvious to require comment.

Having noticed the most egregious errors, we will close with a summary of the other principal products, and leave the reader to judge of their accuracy; some of them are not over-estimated.

Bushels of wheat - - -	76,174,849
" Indian corn - - -	297,855,658
" Oats - - - -	106,375,192
" Potatoes - - -	101.981,439
" Rye - - - -	17,037,600
" Buckwheat - - -	6,952,326
" Barley - - -	3,848,140
Number of horses and mules - -	3,489,150
" Neat cattle - -	13,438,383
" Sheep - - - -	19,085,962
" Swine - - -	20,745,898
Value of poultry - - - -	$10,992,610
Pounds of wool - - -	26,939,340
Products of dairy - - - -	23,959,581
Products of orchard - - -	7,259,078
Gallons of wine - - - -	316,626
Value of lumber - - -	10,955,646

The table is at least a bad basis on which to found calculations. What dependence can be placed on the census of population emanating from the same sources? X.

ON INDICATING AND DESCRIBING GRASSES.

To the Editor of the Farmers' Register.

Hillsborough, N. C., June 16th, 1841.

Dear sir—The suggestion of my excellent friend, Dr. Darlington, seems to me to present the greatest advantages for securing the end which we have lately discussed. A specimen of a plant is certainly better than the best description which can be written for determining the true name of a species. It is also better than a plate or figure, which is proposed by Mr. Lewis, in the Kentucky

Farmer. For unless the plates were executed with the minutest precision and colored like nature, a person unacquainted with botany would find it difficult sometimes to determine to which of two or three similar species his plant is to be referred. Plates prepared with the requisite accuracy would be too expensive for general use, while coarse uncolored figures would be of little service.

And I am disposed to believe that every person who has interest enough in the matter to purchase a very costly work, would not hesitate to take the trouble of collecting the known grasses in his vicinity and get them labelled properly by means of some central herbarium to which he can have access. After that, his doubts are at an end.

My friend, Prof. Short, I doubt not, will very willingly label plants for Mr. Stevenson, and Dr. Darlington for Mr. Skinner. I will with pleasure perform that service for you, and I presume every editor of an agricultural paper in the country will find no difficulty in securing the aid of some good botanist to give authentic names to his collection of plants. And when this is done, each botanist can report the scientific and vulgar names of the grasses of his district in the agricultural paper, which can be copied into others. The knowledge of a good part of the country on this subject can thus be gathered up in the least troublesome manner, and if necessary be subsequently condensed and arranged by some competent hand.

Dr. Darlington is certainly right in the matter of learning the technical names of grasses. They sound uncouth to an ear accustomed only to the English, but they make but little if any heavier draught upon the memory than any other new words. Farmers, I find, have learned to utter *morus multicaulis* with all the fluency of a botanist.

You and your Virginia correspondents are very familiar with such terms as "wire-grass," "hen-grass," and the like, but they are sealed terms to me. I wish you would collect a specimen of each of your grasses that has a name, for me, that I may gratify my curiosity about them. I presume, however, from the interest you have manifested in the elucidation of these obscurities, *that you have already commenced your collection.*

I intend to further your project by adding to your collection from my own stock some specimens from other sections of the country which may not be found in Virginia. Very respectfully, yours, &c. M. A. CURTIS.

For the Farmers' Register.

WILD ONION.

To exterminate this vile pest from our wheat fields is a great *desideratum.* All facts or observations connected therewith cannot fail to be interesting to the agricultural community. The following communication is made, not as warranting any definite conclusion, but more to draw forth any further observations which others may have made.

In 1839 I had three small lots very much infested with wild onions. No. 1, then in clover, not grazed, was fallowed in the fall of 1839, and produced a fair crop of wheat in 1840, but containing so many onions that the crop was hardly saleable. After the wheat was cut off, I ploughed the land and sowed peas. In the fall of 1840 the peas were turned under, and wheat again sown about October 11th. Among the peas not an onion was to be seen, and I was in hopes the two ploughings (for the peas, and then to sow wheat,) had effectually eradicated the onions. The wheat crop on this lot was again this year very good, but as much mixed with onions as last year.

Lot No. 2 was in wheat in 1839, and produced almost as much onion as wheat. In 1840 the land was put in corn. The onions that fall started by thousands. Early in November the land was ploughed, and wheat sown on the 10th. The wheat this year is better than I expected, and scarcely an onion to be seen in it.

Lot No. 3, at rest in 1839, was put in corn in 1840. The onions began to grow in great quantities on this, as on lot No. 2, in the fall. When ploughing it in November for wheat, my foreman remarked to me that it was useless to put that piece of land in wheat, for it had never brought any thing but onions. The wheat was sown on November 10th. The crop this year was good, and very little onion in it.

I infer that to rid your wheat of onions in land infested with them, you must wait, in the fall, till they have started, and then plough or harrow, so as to destroy the growth of young onions before sowing the wheat. Whether such a course often repeated will clear the land itself of onions, or whether I refer the effect to its proper cause, further observation must determine.

A YOUNG FARMER.

FAILING TO GIVE LITERARY CREDITS.

The last Boston Cultivator, after saying something complimentary to our journal, adds the following indirect but not the less pointed censure:

"On looking at the June number we noticed a well written article in it 'On hiving bees,' and were making up our mind to copy it, but on reading it through we discovered it to be an exact copy of our own article on the subject, published in the Cultivator in May last."

The fact of omission to credit the extract to the Boston Cultivator is truly charged. The only excuse is, that the omission was not designed, nor did we know of its having been made until thus informed. But though thus having failed, through inadvertence or carelessness, to give the credit due to the Cultivator, the article itself will clearly show that we did not in any way assume the credit of its origin. It not only has none of the customary marks of an original article, but further is referred to in the table of contents under the head of "Selections." Every editor and publisher must know, even if all others do not make the proper allowances, that it is next to impossible, in the hurry of business, and still more because of the previous errors of other intervening publica-

tions, to entirely avoid omissions or errors in regard to credits of the authorship of selections. In the long course of our editorship, it is possible that many such charges might be as justly brought as the above; but if so, the grounds of all are as yet unsuspected by us. And we can lay claim at least to this merit, that none are more solicitous or careful to avoid such offences; and we believe that no publication is, in fact, less offending on this score.—ED. FAR. REG.

THE COST OF TRANSFERRING THE MONEY OF THE GOVERNMENT—THE COST OF EXCHANGE--AND THE AGENCY OF A NATIONAL BANK FOR LESSENING BOTH.

For the Farmers' Register.

Of the many fallacies and popular delusions which sustain the paper-money system of this country, there is none more false and absurd than the asserted great difficulty of transferring funds, and especially the revenue of the government, if *without* the aid and agency of a national bank. It is claimed by the advocates of the paper system, and scarcely denied by most of its opposers, that, if considered apart from all constitutional or political objections, the establishment of a national bank would serve admirably as an *economical* expedient, or money-saving agent of the government; and that if dispensed with, because of objections on political or other grounds, that any substituted agency for transferring the revenue would be very far more costly than that of a United States bank. We assume opposite grounds; and will here submit some of the reasons for that assumption. We shall here have regard merely to the *economical question*, or that which deeply concerns the agricultural and general pecuniary interests of the country. The *political question*, or the bearing of a national bank on political rights and interests, however important, is not a proper subject for discussion in an agricultural journal, and therefore will not be touched.

The New York Journal of Commerce, a paper of deservedly high authority on all matters of trade and mercantile affairs, lately asserted that the necessary transfers of all the revenue of the United States could be effected, promptly, and securely, upon contract and as a mere business arrangement, for a commission of one-quarter of one per cent. on the amount to be transferred. The ground of such a supposed arrangement was to be, that the revenue was to be received by the agent at the points where collected, in specie, and to be placed by the agent, in specie, at such other points as should be required for the disbursements or the demands of the government. Thus, if the portion of the annual revenue *requiring to be transferred* amounted to 24 millions of dollars, the whole cost of the transferrence would be only $60,000.

This positive declaration by the editors of the Journal of Commerce has not yet been questioned, that we have heard of, by any one, on the ground that the *commercial facts* implied were not true. Another paper, which seems to yield that point, has objected to such agency, upon other grounds, which has brought forth from the Journal of Commerce the following additional remarks:

"For the commission above named [one quarter of one per cent.,] we will undertake to arrange the whole matter with institutions of the first responsibility, so that the money of the government shall be perfectly secure, and so that the Treasurer at Washington shall have no other trouble in the business, than to make up a weekly statement of receipts and of orders for disbursements, and the money shall be accepted wherever it may have been paid in, and paid out wherever it is expended. There is a system of exchanges now in operation all over the United States, which proves that the thing can be done, and that whoever does it would make a fortune by it. In fact, we have no doubt that the arrangement could be made without the allowance of any commission whatever. Persons at a distance may not readily credit this, after all that they have heard of the disordered state of the exchanges, and the necessity of some contrivance to regulate them. But a closer examination will show, that if Congress would, by a bankrupt law, brush off the bankrupt or dishonest currency factories of the south and west, and so correct the *currency*, the exchanges would be seen to be in a state of good regulation. At any rate, we hold ourselves bound to arrange a fiscal agent on the plan proposed above, on receiving thirty days' notice."

We have no reason to distrust the estimate of cost made above, as being ample for the profit of the agent. But suppose for the sake of argument, the cost to be double as much—quadruple—or even multiplied ten-fold—the cost would still be very far *cheaper* than the agency, or even attempting to resort to the agency, of a national bank. Even if the cost of transferring 24 millions of dollars were ten times as much as the quarter per cent, which is deemed sufficient, that enormously increased charge would be but $600,000 a year; and that sum is less than the mere pecuniary cost to government of only discussing the bank question, and other questions proceeding from that fertile source of debate, for the last 10 years. If, by paying even one million of dollars annually, the government could defray all the cost, direct and indirect, of the bank and bank questions, it would be a better bargain than will ever be made by the government in regard to banking. The present extra session of congress is entirely chargeable to the bank question, and its expense will not fall short of half a million. The same question has served to add perhaps twice as much to every year's cost of recent legislation and government. But that is scarcely a tithe of the whole cost to the people. Let the amount be counted of the destruction of value and transference of property by fluctuating prices of currency —of swindling stockjobbing operations—of mad speculation--and changes of habits and corruption of morals--all caused by the great bank question, and even 20 per cent. of the revenue of the government would not be a compensation for the enormous injury to the wealth, morals and happiness of the people. We, therefore, would prefer to pay any possible proper charge for the transferring the revenue of government, as an ordinary business transaction, rather than suffer all the evils incurred by the agency, or vain efforts

to procure the agency, of a national bank for that purpose.

In this tangled controversy on the expediency of a national bank for furnishing a common currency, and for equalizing exchanges, it seems to be taken for granted that a common circulating medium is essential to that end. This is not so. The currency (paper) of the United States, whether when in good or in bad repute, was confined to this country, and so is the proper currency of Great Britain to its own territory. Unless by accident, and in some rare and trivial cases of exception, no bank-note of either country ever found its way to the other. And as paper constituted the great body of the currency of each, even when the paper was convertible to specie, there was no currency in common between these two great commercial countries, whose regular commercial business is scarcely surpassed by that of any on the globe. Yet this absence of any common currency has not been the slightest obstacle to the extended and most beneficial exchange of commodities, and transferrence of funds. And it is as easy for an American to make a purchase, or a payment in England, as in any remote city of his own country when our currency was deemed in the best condition.

Now if there could exist, by possibility, and had long existed, a paper-issuing bank, or paper currency common to these two countries, so that this paper money had been used for transmission instead of drafts or bills of exchange, it would be now as general and fixed a popular belief, as it is in regard to Virginia and New York, that no trade could be beneficially carried on, except at immense loss in exchange, between the United States and England, without such common paper currency, or a joint and common bank of issue. Extend the application of the doctrine, and there would be found as great commercial necessity for a joint bank for all Europe and all America—indeed for Asia, Africa, Australia, or for the whole commercial world. Yet we all know the general fact that trade is carried on perfectly well without any such joint banking establishment or common currency. And none know so well the falsehood of the assertion of the absolute necessity of a common paper currency, as the bank men and commercial men, who use it as an argument to urge the establishment of a national bank, which they want for other and selfish purposes. Ignorant politicians, and their ignorant and blind followers, may indeed believe this doctrine. But intelligent merchants and money dealers have more knowledge than to believe what they aim to make the politicians and the people believe in this respect.

The great operations of trade between different countries, and between different parts of the same great country, are conducted by *exchanges of commodities*, and not by payments and transmissions of money, whether of paper or of specie, for the amounts purchased and sold. Exchanges of products between this country and England might take place to the amount of 100,000,000 annually furnished by each country, and if the total amounts were equal, not a dollar need be transmitted to make payment. The American who sold tobacco or cotton in England, would receive (in preference) not money, but a draft on England, which he would sell at a premium to some one who wished to purchase or pay for goods in England. The operation is so simple and clear as to need no further explanation. Extend the application to the whole trade between the two countries, and the result is, that, even if each individual sale were made for cash and paid for in money, there would be no need of transmitting any money across the Atlantic; as it would be more profitable for the latter class to purchase such foreign funds or drafts, rather than to transmit money, no matter whether there existed a specie or a paper currency, or uniform currency of either.

But it is true that a precise equality of sales and purchases of the United States and England in any one year would not be possible. But that does not affect the principle of the position. The *balances* only would have to be paid for in specie, between countries the least connected in trade; and these balances will be very small compared to the whole amount of exchanged products. But between countries closely connected in trade, the balance of one year would generally be settled in the next year's transactions, and be almost always discharged in commodities instead of money.

The generally prevailing opinions of the necessity, and of the mode, of transferring the revenue of the United States are as erroneous as those upon trade between different countries. The whole revenue of the government has not to be brought to one place, thence to be sent to every place of disbursement. As in the case just stated of trade, it is only the *balances* that require to be moved; and not always even the balances. Under the present system of indirect taxation by duties on importations, the greater part of the revenue will be paid in the city of New York. All the disbursements of government which are made there, or can be as conveniently made there, will of course absorb so much of the revenue, and save all charge for transferring the amount. But this is but a very small proportion of what may be so paid. On account of the city of New York being the great commercial capital and mart, it will follow that money there will be at least as valuable to all persons who have to make purchases, as at any other place in the union, and generally more so. Consequently, if government has to pay a sum, whether in Maine, Iowa, New Orleans or Norfolk, a draft on New York for the amount would be more valuable to the creditor, as he could forthwith sell it for more to a merchant or broker, or to a bank, than the amount of the debt in specie. Thus, much the greater part of the expenses of government might be paid without any actual transfer or removal of money by the government; and the transfers which would be subsequently made, to equalize the supply and demand for speeie, would be in the ordinary course of trade or exchange, and conducted at the cost and risk of private individuals, or banks. The permanent balances, whether accumulated by private trade or governmental taxation, would indeed have to be transported from the points of unnecessary accumulation, to other places where wanted and due. But these permanent balances would be small in comparison to the whole amount; and the expense of removal, even in specie, would not be worth naming in comparison to the cost of a government banking system as a means for transferring government funds. And, moreover, these balances have *now* to be so transported, and in specie, and always must be, under any

system of trade or banking that can possibly be devised. To whatever points the course of trade, or operation of taxation and disbursement, *without* a national bank, or any banks, will direct and accumulate balances of specie, the same will be the direction and accumulation if a national *specie-paying* bank and branches existed. For though the balances should be in bank-notes, these notes would require to be paid in specie, as the first step towards settling the balances. The substitution of paper money adds another link to the chain of circulation, and may somewhat delay the final result. But the result will finally be the same. If a United States bank should be established this session, with 40 or 50 branches, in the first place it will not, and cannot, make the whole of its currency of equal value every where. as is generally and foolishly supposed. But even if this desired and impossible result were to be reached, and the branch notes of Wisconsin, and Arkansas, and Florida, were worth as much in the city of New York as those of the city branch, that very equality of value (or the nearest possible approach to it) would serve but to bring the notes of distant branches more speedily and in greater quantity to New York, in the regular course of trade. The branch there would soon be overwhelmed with the notes of distant branches, and would necessarily have to return them, or the balances that could not be disposed of in trade, for specie. And the specie thus required to be transported, (a process which paper-money men profess so much to abhor,) would be just as much as if paper money had not existed; indeed more, if paper money had served to stimulate and increase either legitimate trade or wild speculation.

A national bank, therefore, is not needed for the purposes above considered, and for which purposes alone most of its deluded and honest advocates desire the establishment. It would, indeed, be a powerful and admirable political engine for the purposes of those who could wield its influences. It will do wonders in transferring wealth from the possession of those whose honest industry had earned it, to that of speculators, stock-jobbers and legalized swindlers of all sorts. But, however desirable for these purposes, to the classes to whom it offers such advantages, a national bank is not needed to equalize exchanges, or to furnish a uniform currency, or to lessen the expense, or beneficially facilitate the transferring of the revenue and funds of government.

No currency but gold and silver can possibly have the same value at every part of an extensive country; and even if the currency were of gold and silver, or of paper convertible on demand *somewhere* to gold or silver, still exchange (that is, the cost of transferrence of funds) must cost *something*, and therefore some premium would have to be paid for drafts. But though a perfectly uniform currency is a vain fancy, and perfect equalization of exchanges is impossible, still the necessary differences and inequalities would be so small as to be unimportant, and of no practical evil, if the general and state governments had not created, or sustained by their indulgence, a depreciated paper currency. If the currency were either of specie, or of paper *truly and fully convertible to specie*, at the points where issued, the price of exchange would never be considerable, even though there were no other than state banks. If the notes of an undoubtedly solvent and honestly paying bank should find their way to a distant state, their market value would be known by reference to any broker's list, or prices current, and the fair value of the notes could be obtained, deducting the necessary profit to the exchanger.

But if bank notes are not truly redeemable then of course they will depreciate, and depart the more widely from a "uniform currency" in proportion to the distrust of their value by the public. And such will be still the case with the notes of all non-specie-paying state banks, even if a United States bank existed—and such would be the case with the United States Bank itself, if it were not a specie-paying bank. But herein again we run foul of two other popular and prevalent fallacies, one of which maintains that a United States bank, because of its very origin and constitution, will *necessarily* be a specie-paying bank; and the other, that it will necessarily compel all the state banks also to pay specie. A few words will suffice to expose the emptiness of these pretensions.

A national bank, supported and upheld by the revenue and the credit of the federal government, must indeed be so powerful, and pervading in influence, as to withstand dangers, disasters and foes, that would prostrate the credit of any bank or banks not so sustained. Notwithstanding, it was due to good fortune and accident, and not to any inherent virtue of a national charter, that both the two former United States banks continued to pay specie throughout their existence. Either bank would certainly and necessarily have stopped payment, if its charter had continued but three years longer. And the last bank was upon the point of stopping payment years before the expiration of its charter, and before any hostile action of the government had commenced, or was anticipated, and without any cause except the improper and fraudulent acts of its own authorities. The unexpected arrival of but $100,000 in specie alone prevented the mother bank suspending payment the next morning. The occurrence of war with any powerful enemy, and its necessary pressure on trade and finances, will never fail to cause a United States bank (if a bank of circulation) to stop payment. And this inevitable stoppage would take place precisely when it would be most disastrous to the country; and when utterly impossible to be remedied, or punished, by any legislation or other action of government.

It is true that a United States bank can exert great power in compelling state banks to pay specie for their notes, so long as they profess to pay them, and are anxious to maintain that character. But if the government of a state, Virginia for example, chooses that its banks shall be *forced* to pay specie honestly, there is no need of resorting to the agency and foreign aid of a United States bank. It would be sufficient that the government should not protect the banks in their fraudulent refusal to pay their notes—to merely let them meet the general legal destiny of debtors, whether honest or fraudulent—and all our banks would be specie-paying immediately, and otherwise as honest as the law should require and *compel*. But as the government of this and almost every other state south and west of New York, have *chosen* to sustain their banks in the long continued refusal to pay their notes and debts, they will con-

tinue so to choose, and can so sustain the banks in their refusal, in spite of any operation of a United States bank. Indeed, as soon, and as long, as a state bank boldly refuses to pay its notes and other dues, and it is sustained in such refusal by the law of the land, the bank is thereby made invulnerable against all assaults. It is entrenched behind impregnable barriers, constructed of its own discredit and infamy. The banks of Virginia could commence specie payments to-morrow, and maintain them, if compelled to that honest course by any external power. But in so doing, they must lose all their present dividends, which, whether of *net profits* or of *capital*, are now the fruits of legalized cheating and robbing the community. They would either have to contract their business, or to use its gains in purchasing specie to meet liabilities. There possibly may be plenty of other and stronger reasons for establishing a United States bank, which we mean not here to discuss; but this one inducement held out, and so generally relied on, of its causing the state banks to pay specie, is certainly the weakest and most contemptible of all pretences. The state of Virginia, the people and the government, either *do* or *do not choose* to sustain the banks of Virginia (as they are sustained by law) in their present dishonest refusal to pay their debts. If the choice is to sustain this dishonest course, all compulsory action, to the contrary, of a United States bank will be utterly futile. If the state government requires the banks to pay, there is certainly no need to go abroad for an agent to compel that which the general laws of the land would sufficiently exact, if the exclusive privileges to banks, of indulgence to fraud, were merely withdrawn. TAYLOR OF CAROLINE.

EXPLANATION IN REGARD TO A PART OF MR. TURNER'S ADDRESS.

To the Editor of the Farmers' Register.

Roseneath, July 21, 1841.

Dear sir,—

My friend, Gen. Richardson, informed me this morning, that, in a conversation that he had recently had with you, you told him that you intended to publish the address delivered at the late meeting of our agricultural society. I will not disguise the fact, that I feel considerably flattered with this token of your approbation. But my object in writing is to say, that I do not feel willing that this production should thus come before the public, without a word or two of explanation. It would appear from the letter of the address, that I am in favor of a United States bank. Now the fact is, that I am no more in favor of a *United States bank*, than of any other bank. I went upon the principle that our merchants and other trading people would have a bank of *some kind*. This being the case, I thought and still think it good policy to tolerate, and even patronize, that bank which is least objectionable. And as the late United States Bank did actually equalize the currency, I gave it a decided preference over other banks, the currency of which is in a wretchedly disordered state. The sentiment intended to be conveyed is simply this: that that bank suits farmers the best which makes one man's dollar equal to that of another, all over the world. I care not by what name it is called, if it have the above effect, that is the bank for farmers. If you publish the address, please make the above explanation. As to our long-speeching legislature, and our shaving banks, I thought they deserved a lashing, and I gave it to them with all the severity of which I was capable. With best respects, &c. J. H. TURNER.

[The foregoing letter was received after the portion of the address which appears in the preceding sheet was in type. It is inserted as early thereafter as could be done without much inconvenience. It is not only due to Mr. Turner to permit him to explain his meaning, but his explanation is also due to the public, inasmuch as his language had been reported, and understood by many, as a thorough approval and recommendation of a United States bank. If he is "no more in favor of a United States bank than of any other [existing] bank," he is then (by his context) enough opposed to both kinds. But it is certain that Mr. Turner's words have been construed as highly in favor of the establishing of a United States bank; and one of the most striking proofs of that impression has reached us since his letter. A writer in the Lynchburg Virginian, who is regularly arguing, and at length, in favor of a United States bank, when he comes to treat of the "Expediency," copies entire and adopts all that part of the address which refers to banks, paper money and exchange—being content to bear and to repeat the well-deserved censures therein cast upon the dishonest course of the non-paying state banks, for the sake of the short passage in favor of a national bank. The writer introduces the extract with only the following words:—"2. *Its expediency*. On this point we shall be content with the following *practical argument*, for which we are indebted to the Rev. Jesse H. Turner, the president of the Henrico Agricultural Society. It is the argument of a farmer, not of a politician—and it cannot fail, appealing as it does to the common sense of every man, to exert a wholesome influence on the public mind."

In answer to Mr. Turner's mistaken ground, that the late United States Bank "actually equalized the currency," we shall add nothing more to what has been already said in the preceding pages of this number.—ED. F. R.]

THE SEASON AND CROPS.

The wheat crop of lower and middle Virginia will certainly fall far short of the sanguine anticipations which we held and expressed, and which were entertained by most farmers, just before the

full growth of the crop. The crop of the western part of the state, we understand, though upon less satisfactory testimony, to be no better than that of the eastern part.

After the worst winter, and greater portion of spring, ever known, for corn and spring crops, (on account of continual rains, and long continned cold,) the weather became so fine, that the hope of an average crop of corn, which had waned almost to extinction, was revived every where. But the before stinted corn did not grow as fast as was expected; and latterly, drought has prevailed until it threatens great injury to the growing crops of both corn and tobacco. Without sufficient rain soon, the corn crop in this region will be cut very short.

The oat crop was very short, owing to the wet state of the ground preventing sowing in proper time, or on land in dry and good condition.

July 30, 1841. ED. F. R.

PRICES OF WHEAT.

The Shipping and Commercial list of July 29th, reports the New York prices of "Wheat, Ohio and Genesee, (old,) $1.25 to 1.27½—southern, (new,) $1.18 to 1.18¾." The Baltimore prices, same day, according to the American—"New wheat, Md., $1.18 to 1.25." The American Farmer, of Baltimore, (29th,) says—"The sales of Maryland red wheats are making to-day at 118 to 122 cents for good to very prime parcels. Sales of new Maryland white wheat, of prime quality, suitable for family flour, at 128 and 130 cents."

In Richmond and Petersburg the highest prices for wheat *talked of* by buyers are 110 to 115 cents. We advise farmers to wait awhile for prices at home to more nearly *approach* those of the north —and the owners of river crops to ship them to Baltimore; or, still better, to New York, where the sales are for specie, or paper convertible to specie.—ED. F. R.

CURE FOR THE POLL-EVIL. CASTRATING COLTS.

To the Editor of the Farmers' Register.

Campbell county, March 15, 1841.

I send you a certain cure for the poll-evil in horses, which you can publish, if you think it worthy of a place in your columns. The remedy is this: Make one or two incisions in the swelling, and then wash the wound nicely with strong soapsuds, and fill the wound with lime. A few applications will perform the cure. Care should be taken in cutting, so as not to cut across the neck, and thus wound an artery.

I will (while writing about horses) give you my mode of castrating colts, which is not new, but plain and simple; and, I believe, if care be taken on the part of the operator, it is the best mode. I never had one to mind cutting more than a boar. The plan is this: After the colt is thrown down and carefully tied, the integuments of the testicles are to be laid open with a sharp knife, and the stone pulled out, and the cord of the nut cleaned down. The cord is then to be securely tied with a strong thread, well waxed, and the cord is then cut off near the thread, and the ends of the thread left six or eight inches long. After both stones are taken out, the wounds are to be well greased with old bacon gravy and salt.

STAUNTON RIVER.

THE MUSCARDINE OF SILK-WORMS.

To the Editor of the Farmers' Register.

I beg leave to make a few remarks on the article, which appeared in the last number of the Register, entitled "the muscardine." This article is calculated to gratify the curious, but when viewed in connexion with some recent publications on the same subject, it is also calculated to excite unnecessary alarm, and to strengthen the already strong prejudices which possess the minds of some persons in relation to the success of the culture of silk in Virginia.

The writer of the article takes it as settled that the *muscardine* is contagious, and cites the experiments of Dr. Bassi, of Milan, to establish this character of the disease. I have been rearing silk-worms for portions of six years, and during that period have only seen about thirty cases of the muscardine. I have twice rubbed the "farinaceous efflorescence" (which the Europeans say is the seed of a vegetable that extends its roots through parts of the worm,) on the healthy silk-worms, in order to "inoculate" them with the disease, but they retained their health and went on as usual. This disease may be *contagious* in Europe; but until some more decisive evidence than any which has yet been adduced shall establish its character of *contagion in Virginia*, I shall hold that it is in our climate of *rare* occurrence, and *not contagious*.

I have now about 600,000 silk-worms in various stages, from *one day old* to maturity. They are remarkably healthy. The oldest are spinning in 22 to 25 days, and forming excellent cocoons. The varieties, "mammoth sulphur" and "pea-nut."

The use of lime I consider *invaluable*.* I sprinkle it over them just before giving them their meals, *once* during the third and fourth ages, and *daily* during the last age. It counteracts the bad effects of heat and moisture, keeps the appetite of the worms keen, and no doubt hastens their maturity. LAYTON Y. ATKINS.

Stafford, Va., July 5th, 1841.

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* Other preventives must not be neglected. The lime, although excellent, will not save worms that are *piled up in layers*, nor will it supply the place of *liberal* ventilation. I prize highly the labors of scientific men, but they are fallible, and it is possible that Dr. Bassi may be mistaken. The climate of Europe may be calculated in an *unusual* degree to produce the disease; and in assigning causes for disease, doctors will differ, and the imagination is often allowed too much play.

SUMMARY OF NEWS.

Saturday, July 3, 1841.

The Frederick County Bank.—We learn, from the Baltimore Sun, that nearly the whole amount of money of which the Frederick County Bank was robbed during the month of May, has been recovered. The account of the *negotiation* by which the money was received, is a curious one. A correspondence, it is stated, took place between an attorney of New York and the officers of the bank. This correspondence was commenced about two weeks since, the attorney making propositions in behalf of his client, the robber of the bank, to which the officers were disposed to accede if nothing better could be done. Accordingly, Dr. Tyler and Mr. Bell, of the Bank, went to New York, and there concluded the negotiations with a compromise which leaves the rogue in the possession of the gold he carried off, some $10,000, for his night's work, and the bank recovers all the rest, in value something upwards of $170,000. This is a pretty story to tell the officers, permit the rogue to keep $10,000 in specie, for the return of $170,000 in paper, after they had, by the measures they immediately adopted, succeeded in getting in all the issue that had been honestly obtained, leaving the stolen money in the hands of the thief, and which would have been the surest means of his detection. It seems very likely, too, that a thief who had so long successfully eluded detection, should expose himself by entering into a negotiation to allow him to keep money that he actually had. Besides, it was exceedingly culpable in the agents of the Bank to make any compromise with a rogue which would go to reward his villany. The story but confirms the suspicions that were created at the time of the robbery, that nobody *out* of the bank was the perpetrator of it."—*Phila. Ledger.*

The Ledger of a later date says:—

"It appears from more recent accounts, that instead of $10,000 the agents of the bank who effected the *negotiation*, allowed the thief to keep *twenty-eight thousand dollars*, or all the specie and notes of banks other than the issues of the robbed institution, in his possession, and which would not be likely to lead to his detection. The lawyer, one Wyley, who managed this corrupt and rascally piece of business, charged only *ten thousand dollars* for compounding the felony. The circumstances as related bear upon their face the evidence of a precious piece of knavery by some of the actors, that needs some further investigation. A curious feature in the case is, that when Wyley was questioned as to who were the robbers, that individual answered, you have seen the principal of them several times during your visit."

The Journal of Commerce announces the arrival of the brig Charles Carroll, from Tampico, with about $70,000 in specie. The brig Patsey B. Blount, from Belize, Honduras, $11,397. The bark Ann Eliza, from Vera Cruz, brings $100,000 in specie.

The Rev. James Abercrombie, D. D., of the Episcopal Church, Philadelphia, died on Saturday night last, aged 84 years.

Canada.—A petition was presented in the provincial legislature at Kingston, recently, asking for an increase of compensation. The speaker explained to the house, that in presenting petitions asking for appropriations of public money, it was necessary to *obtain the governor-general's permission to present such petitions!* The petition was withdrawn. Bills to abolish imprisonment for debt, and to impose protective duties on foreign produce, that is, on the produce of the United States, are about to be brought before the united parliament by Col. Prince.

It is stated, in the Western (Tenn.) Review, that several of the gentlemen from the United States, employed by the British government to instruct the natives of India in the cultivation of cotton, have returned home. They complain of the climate and its diseases, and have no faith in the enterprise of cotton growing in that region.

The Ex-honorable C. F. Mitchell has had two bills found against him, at the Sessions of New York city, for forgery; one was found by a former grand jury. There are now three indictments against him for forgery—and another complaint pending besides, which will probably be laid before the next grand jury.

There have arrived in New York, during the past week, from various foreign ports, 4889 passengers.

The Vandalia (Ill.) Free Press states, "on unquestionable authority, that Gov. Carlin has caused to be issued upwards of $1,000,000 of state bonds, which have been sent eastward to be sold for whatever price they may command."

Major General Macomb, commander-in-chief of the army of the United States, died suddenly on Friday, the 25th ult., at Washington City.

There are no less than 346 applicants for the benefit of the insolvent laws at the present term of the Insolvent Court of Philadelphia.

The Spanish brig Frederick, of St. Johns, Porto Rico, was capsized by a waterspout on the 3d ult. The crew had barely time to take to the boat, without provisions or water, before she sank. They were picked up by the Sylph, and landed at Bermuda.

Parsimony vs. *Vanity.*—The Boston Mail thinks an effectual remedy might be had against the long and foolish partisan speeches of members of congress, by their being obliged to have them published at their own expense.

Rain storm at Lynchburg.—A heavy and destructive storm of rain was experienced at Lynchburg on the 21st. Several breaks were made in the James River Canal, and dams, bridges, &c., were swept away by the force of the torrent.

A memorial for a United States Bank, measuring *two hundred feet in length*, with double columns of closely written signatures, was sent to Congress, from New York, on Saturday, in charge of a committee from the board of trade.

The Montgomery county (Pa.) prison has not a single inmate.

By this morning's mails, July 3.

The Philadelphia Ledger of yesterday says:—

"The Frederick Examiner, of Wednesday, has a statement of the facts in relation to the recovery of the money stolen from the bank of that county. The Mr. Wiley who undertook to perform the business for the thieves, is an associate justice of one of the inferior courts of New York, and was engaged in the discharge of the duties of that office when the agent of the bank waited upon him. The Examiner says this is not the first time that Mr. Wiley has acted as mediator in like cases. Some very few years ago, he was, we understand, in the same way instrumental in the restoration of the funds stolen from the Providence Bank to the amount of $183,000. He would, in the present instance, give no other information on the subject of the Frederick County Bank robbery, than that he was informed that 'the vaults were opened by false keys, and that six persons were concerned.' This account, if true, shows Mr. Wiley to be in strange connexion with burglars and robbers. The duties of his office are to detect and punish crime, with a view to prevent it, but his practice, it would seem, is to screen the criminal, apparently for his own benefit. It is time that his acts were more particularly scrutinized, for he now appears to be implicated in as great an operation of stool pigeoning as has happened."

Canada.—Reinforcements for several of the regiments in Canada arrived at Quebec on Sunday last. The number of immigrants who have arrived this season, to the 26th of June, is 15,254. The experiment of sending produce down the Rapids to Montreal by steam has succeeded. The government have a decided majority in the provincial parliament.

It is said that Dr. Dyott, who was recently released from prison, is again to be opposed upon his application for the benefit of the insolvent laws, at the next term of the Insolvent Court of Philadelphia.

Saturday, July 10, 1841.

The steam-ship Britannia arrived at Boston on the 3d, in 13½ days, bringing accounts from England 15 days later.

Sir Robert Peel's motion of "no confidence in ministers" had passed by a majority of one vote. Parliament was about to be dissolved.

"All England is in a state of tremendous political excitement." "The money market is consequently stagnant; the funds paralyzed. There is an improvement in the cotton market, but very little or none in trade in general. The price of wheat has improved. The crops are all in fine order.

The canvassing for the approaching election was in full operation,

"Nothing new from China."

The insurrection in Crete is still gaining strength.

The great abolitionist and anti-slavery apostle, Sir Thomas Fowel Buxton, is a great brewer and gin-shop owner of London.

"The warmest advocate of the credit system is fain to confess, that the difficulty in the way of a sound currency at the south is the disgraceful fact, that the respective legislatures are under the influence of insolvent banks; and yet these same persons advocate the raising up of a moneyed power, in whose embrace the independence and influence of congress will be crushed, as surely as that the currency laws of Pennsylvania have passed into a by-word."—*N. Y. Herald.*

Judge Henry St. George Tucker, president of the Court of Appeals, has been elected Professor of Law of the University of Virginia. Professor Sylvester, of the London University, has been chosen to fill the vacant mathematical chair. The professorship of Modern Languages is also supplied.

The students of Harvard University (Mass.) are in a state of rebellion—but somewhat quieted at last accounts.

It is thought that Mr. Clay's United States Bank bill, (which goes the whole figure,) may command approving majorities in both houses of congress. We doubt it. If it passes, it will be *vetoed* by President Tyler. Mr. Clay's bill *forces* the states into the measure—that of the Secretary of the Treasury proposes to *bribe* them into assent. It will be more difficult to oppose the latter than the former application, and therefore it is more to be dreaded.

The Planters and Mechanics' Bank of Columbus, (Ga.) has at last been *protested* on a $5 note, for which specie was demanded and refused. Mr. James Wesson, who did this good service to the cause of honesty and the public weal, has notified the governor of the protest, and, according to law, a writ of *scire facias* must be issued against the bank.

The steamer Clarksville, from New Orleans to Nashville, struck on a snag, and sunk to the hurricane roof in two minutes. Two persons only were drowned. The cargo a total loss.

A nomination of Gen. Scott for the next presidency has been made by the whig party in Pennsylvania, to meet that of Commodore Stewart, by the democratic party; and "Chippewa clubs" on the one side are opposed to "Ironsides clubs" on the other. We trust that the next president will have some other and better grounds of claim than either military or naval glory.

More than 300 officers of the small army of the United States have resigned their commissions since the commencement of the war in Florida.

S. V. S. Wilder, a great stock-jobber and financier of New York, has become bankrupt. His deficit is stated by some to be three millions of dollars; the most moderate estimate is one million.

The state of Indiana has failed to pay the July interest of her state debt.

Gen. Wingfield Scott has been promoted to the rank of Major General, (of which he had previously but the brevet,) and thus, as senior officer, becomes commander in chief of the army.

A slave was concealed on board a vessel which lately sailed from this town for Boston. The owner of the slave pursued and overtook the vessel in James River, and searched for and recovered the slave. The vessel belongs to Petersburg, but is commanded by a Boston man.

Young Semmes, the student of the University of Virginia, who was in prison awaiting his trial next autumn for the murder of Professor Davis, has been bailed in the penalty of $25,000. He is said to be dying of consumption.

The bill for distributing the proceeds of the public lands among the states has passed the House of Representatives, but by a majority of only 8 votes.

The legislature of New Hampshire, by a vote of 160 to 51, have passed the following resolution, bearing upon the slave-stealing controversies between New York and Virginia, and between Maine and Georgia. "*Resolved*, That the refusal of one state to surrender a person charged with the commission of a crime within another state, and who shall flee from justice, is in open disregard of the plain letter of the constitution, subversive of the peace and harmony of the union, and destructive of the ends for which the federal constitution was established."

The dividend of profits of the Merchants' (Cotton) Manufacturing Company of Petersburg recently declared, was 5 per cent. for the half year. This company has formerly paid at the rate of 24 per cent. a year, and rarely less than the last dividend. All the cotton manufactories here (as elsewhere) are much depressed, and for the greater part make no dividends.

The recent annual report of the Raleigh and Gaston Rail-road shows that great work to be improving. The receipts of the last fiscal year exceeded the preceding by $17,000, or about one-third added to the previous income. We learn from other sources that the business is managed well, and with strict economy.

Saturday, July 17, 1841.

The notes of the Wheeling Bank are now at 10 per cent. discount below the notes of the other non-specie paying Virginia banks, and are no longer current, although guarantied by the state, by being made receivable for taxes. But for that guaranty, they would sink much lower. As it is, they will afford a fine harvest to deputy sheriffs, who will buy up Wheeling notes at 10 per cent. discount, and pay them into the treasury; and all the loss of depreciation will fall upon the commonwealth. This is but a small foretaste of the effect of the state being security general to the banks. Whenever one of them shall stand confessed as bankrupt and insolvent, its whole issue of notes will be used to pay in the state tax; and having served that, their then only use, they will remain worthless in the treasury. If the legislature of Virginia is not in absolute bondage to the banks, they will, at the next session, withdraw the government guaranty of bank solvency; and also proceed to discharge all state debts and obligations by selling out bank-stock, until the existing partnership of bank and state shall be completely dissolved.

The Richmond Dock was sold at auction, last week,

for $100,000, and bought by the James River and Kanawha Company.

The "Catholic Total Abstinence" societies of Philadelphia have had a grand display, in a procession of 7,000 members.

"The legislature of New Hampshire, by a vote of 138 to 99, passed a bill which makes the private property of the stockholders in all the banks hereafter to be chartered, liable, to a certain extent, for the debts of the institution." This is something like a *beginning* to correct the abuses of the banking system.

The Bank of Darien, (Ga.) is *confessedly* broken. Four-fifths of the stock belongs to the state of Georgia. It is expected that the notes will not be paid. This is a fine specimen of the policy and *profit* of a government becoming a partner in banking operations.

The minister sent by the Texian to the Mexican government was not permitted to land. The Texian papers intimate the renewal of war, by the invasion of Mexico.

The elections in Mississippi will turn upon the question of paying the state bonds or not. There is the "bond-paying" party and the "anti-bond-paying" party, each running its ticket. This is one of the most deplorable results of the swindling banking system fully carried out. The legislature of Virginia have not as yet gone half way in furthering the great swindling paper money system; but their course is onward; and, if not checked, will lead to such results as have already been realized in Mississippi.

The village of Waterford, N. Y., has been almost entirely destroyed by fire. From 70 to 80 houses were burnt.

McLeod's application for discharge upon writ of *habeas corpus* has been refused by the Supreme Court of New York, and he is remanded for trial by jury, in Niagara county. He may, however, previously appeal to the Court of Errors of New York, and thence to the Supreme Court of the United States. His escape, through one of the many holes offered, will be certain; but it is a pity that it had not been effected without so much delay, fuss, and national discredit.

The following passage from the "Money Article" of the New York Herald, of the 13th, applies to all other banks as well as those of New Orleans:

"In New Orleans public opinion is taking a direction which will, in all probability, soon drive the sound banks into resumption. In May last we stated that many of the brokers here were buying up the certificates and bills of the southern banks, and sending them home and protesting them for non-payment; then procuring judgment and attaching any funds of the Banks that may be found in this city. In New Orleans, by the charters of most of the banks, they are compelled to pay 12 per cent. interest on protested notes until they are paid. This has led to a very general adoption of this process, in regard to these banks, the standing of which is such as to render the ultimate payment of the notes comparatively sure. This puts them in a position that will make resumption more profitable than suspension; and of course those banks that are able will do so. Those banks that are sound, it is supposed would long since have resumed if they could have procured a settlement of balances from the other Banks. They have, during the past month, been more limited in their discounts, and have nearly ceased buying bills. This, with the demand for their notes for protest, have caused a fall in the premium on specie. There is nothing like enforcing the laws applicable to the just claims of creditors, to equalize the exchanges. In a few years' time people will look back with astonishment at the absurdity of "relieving the people," by authorizing the banks not to pay them that which is due."

The law of Ohio now is, that slaves carried by their owners within the jurisdiction of that state are thereby entitled to be free; and passengers in steamboats, calling at Cincinnati, have thus been, and hereafter will be, systematically robbed of their slaves, by an organized association of abolitionists. The law is the same in Massachusetts, and a case of its exercise has just occurred, accompanied with circumstances of great outrage. Mr. Ludlam, of Richmond, with his family, was called suddenly to New Bedford, to see his wife's dying father. Mrs. Ludlam being herself in bad health, made it necessary to take along her negro servant girl, who was a hired slave. When in New Bedford, two white ministers of the Gospel procured a writ of *habeas corpus*, and heading a mob of negroes, searched the house, and seized and carried off the affrighted and reluctant girl to Boston, where, upon examination, she was discharged by the judge, and of course remained *as free* in the hands of the abolitionists. The slave-holding states *must properly oppose and put down* this hostile course, or otherwise submit to the rule of the abolitionists. For these and other worse acts of the abolition states, the strongest measures of redress not forbidden by the federal constitution should be adopted and strictly enforced.

Saturday, July 24, 1841.

The Caledonia steam ship reached Boston on the 17th from Liverpool, bringing news 15 days later from England.

Parliament had been prorogued. The new elections were in progress, under great excitement. In Liverpool and other places there was much rioting, and several persons had been killed. In Carlisle, the military had been called out, and two men were killed in the affray. The Conservatives are expected to beat the Whigs; in which case there will be no repeal of the corn laws, or extension of free trade.

The growing crops of England promised well.

The French accounts are barren of news. Nothing important in the accounts from Spain, Portugal, and the north of Europe.

The insurrection in Candia was still gaining strength. The spirit of insurrection spreading through the Peloponnesus and other parts of Greece Proper, and King Otho's rule is in peril.

Another over-land mail from India had been received, but which brought no later accounts from China than before.

The French loan to Texas has *not* yet been made, as before reported.

A remarkable case of "Lynch law" has occurred in Kentucky, which for deliberation and coolness as well as determination may compare with the celebrated Porteous mob. A drover named Utterback some time ago had been attacked on the road, robbed, and his throat cut, and was left for dead. But he was found alive, though horribly mangled, and though never to be restored entirely, it is now supposed may live. Two men, Maythe and Couch, supposed on undoubted testimony to be the robbers and intended murderers, had been some weeks imprisoned for trial; but would escape with comparatively but slight punishment by law, if their victim should live. This consideration, added to the general commiseration felt for the pitiable condition and long continued suffering of Utterback, caused the remarkable and unjustifiable act of outrage which is stated as follows in the Cincinnati Republican. Full and public notice of the intention had been sent 36 hours in advance of the attempt, and a clergyman sent, and who went, to administer religious aid to the prisoners. "On Saturday, the 10th inst., in pursuance of the notice, about five hundred citizens of Bourbon, from which were added some from Scott and Harrison counties, came into Williamstown in solemn procession and most perfect order. They had chosen their sheriffs to act for the occasion, and proceeded to the jail, and demanded the prisoners, Maythe and Couch. The sheriff of

Grant refused to give them up, or the keys of the prison: he offered, however, no other resistance, and the people at once broke open the doors. They then took the prisoners, placed them in an open wagon, their irons on them, took up the line of march without the least noise or confusion, to the spot of ground where the murder was attempted, about four miles distant. By this time the number assembled was believed to have been at least two thousand. After arriving on the ground, Mr. O'Hara, a member of the bar, addressed the people for some time upon the propriety of permitting the law to take its course. He was listened to with the utmost silence and respect, but without apparently altering the determination of a single person present. The preliminaries were then adjusted, and the prisoners were asked if they had any thing to say previous to the closing of their earthly accounts. One of them, Maythe, addressed a few remarks to the people, admitted the commission of the act for which they were to suffer, denying, however, that it was his wish to commit actual murder. Religious service was then performed by a clergyman present, and Maythe and Couch were hung in their irons, upon a tree standing over the same spot where their crime was committed. Rude coffins were constructed, and they were buried. The crowd then dispersed in the same perfect order."

The New York times says that the steam frigate built in New York, by private contract, for the Russian government, will cost less by 40 per cent. than if it had been built at the United States navy yard. The vessels of war built at our navy yards are overcharged at least as much. The steam ship Mississippi, now building, at the New York navy yard, has already cost $700,000, and before finished will cost a million.

The Mobile Register says that the probable loss of that city by the failure of S. V. S. Wilder is over $300,000.

"The Chattahoochee Railroad Bank of Georgia, which has just failed, is said to have been one of the most stupendous frauds ever exposed. The whole country is represented as flooded with its issues, amounting to millions. The nominal capital of the Bank is three millions of dollars, although it is said there have never been three millions of cents paid in, nor had they ever ten thousand dollars in specie in their vaults. The Chattahoochee Bank has been a swindling concern from first to last, from alpha to omega. Its very first step in obtaining a charter was a fraud upon the Legislature, as it is well known such a thing as building a road was never in serious contemplation. Not a dollar was paid in by the stockholders, but upon the naked charter they went on to issue bills without limit. Now it is said the Bank is broke. How broke? How could it break, if there was the smallest particle of honesty in all its transactions? For nearly the whole of the time the Bank has been in operation, specie payments have been suspended. They have paid nothing out but bills. How then, we repeat, could they break? The closing of this Bank, it is said, is the largest fraud ever committed in Georgia, as there are more of their bills out than there has ever been of any other institution which has heretofore failed. The Macon Bank fraud was but a trifle to it. The distress it will produce is incalculable. There is scarcely a man or woman in that section, who has any bills at all, but has the most of them at this Bank. This, added to the pressure of the times, will make the distress enormous."—*Phil. Ledger.*

The bill to borrow $12,000,000 for the government of the United States has passed both houses of congress.

Hostilities have been commenced between the Argentine and Monte-Videan republics. A battle had taken place between their naval forces in the La Plata, of Monte-Video, in which the latter had been worsted.

The Texian government was about to send a body of 300 soldiers to invade Santa Fe, and withdraw that province from the Mexican power.

Friday, July 30, 1841.

Steam navigation on canals.—Lieut. Hunter's steamer Germ, made its appearance last week at Elizabeth City, N. C., causing all the natives to stare and wonder. It passed through the Dismal Swamp Canal at the rate of six miles an hour, "without producing as much ripple as an ordinary canal boat," and thus removing "all doubts of the practicability of navigating canals by steam, without injury to the banks." Last evening the Germ arrived at our wharves, and attracted considerable attention. She is about fifty feet long and nine feet beam. Her wheels, one on each side, work horizontally, and completely under the water, with a projection on either side the depth of the paddle, so that the whole machinery may be considered as entirely confined within the boat. She will make a short trip to-morrow, with several scientific gentlemen on board. She is now lying near the Navy Yard, and has created considerable excitement among the curious. She is to proceed to New York in a few days.—*Phil. Gaz. July 26th.*

There were recently some executions in Illinois, under "Lynch law," by a band of self-constituted "Regulators," which, in undisguised lawlessness, scarcely fell short in enormity of the deliberate Lynch murders in Kentucky, stated in last week's summary. The following are striking but legitimate results of such acts, and of the state of society which permits their perpetration. "The Rockford (Illinois) Star had the independence to maintain the supremacy of the laws by condemning the recent proceedings by the mob, in the execution of the Driskells. The citizens, thereupon, pretending to regard it as an appeal to the horse thieves to rally and retaliate, assaulted the printing office, broke the press, and scattered the type through the streets. From the lawless spirit which these citizens have shown, it is very evident that they would lynch the jury that would convict any one of their number of the murder, and probably hang the judge that would sentence them. Such is the *justice* of mob law, and the regard it shows for the rights of individuals. Those who countenance it do more wrong to society than would ensue from the crimes which it is the pretended object of mob violence to punish and check."

The rebel federalists of Mexico are gaining ground, and there is every prospect of their success over the existing government.

Another case for Mr. Justice Wiley.—"An express arrived in town this morning, from Jacksonville, Illinois, bringing a handbill, announcing the robbery of the branch of the State Bank of Illinois, of about $90,000 dollars. We copy it.

'FIVE THOUSAND DOLLARS REWARD.

The Branch of the State Bank of Illinois at Jacksonville, was robbed last night, Sunday, the 11th inst. The doors were entered by false keys. The following is the probable amount taken by the robber, to wit: $78,000 of paper; about $47,000 of the above was in Parent Bank paper, the balance mostly in notes of the Branches, and Bank of Illinois. About $8,000 in gold, and 3 or $4,000 in silver. The above reward will be paid for the recovery of the money and the detection of the robber. J. P. WILKINSON, President.

Jacksonville, July 11, 1841.'

"We learn in addition to what is stated, that the books, papers, and evidences of debt, were cut up, mutilated and destroyed by the robbers—for there must have been several persons engaged in it; and that part of the banking house was occupied as a residence, by the teller."—*St. Louis New Era.*

The facts of this robbery (like most other of such successful and *clean* jobs) show conclusively that officers of the bank committed or directed the robbery.

Interlopers in the business, or other rogues than bank officers, generally make bungling work of such operations.

Mr. Clay's bill to establish a national bank has passed its third reading, in the Senate, by a vote of 25 to 24. This is equivalent to a passage by that body. An amendment, offered by Mr. Clay, which secured the passage of the bill, provides that the directors may establish branches, *with the assent of the states* in which the branches are to be established; but that if the legislature of a state does not "unconditionally assent or dissent," at is first session, its assent shall be thence *presumed;* and further, that when congress may find it necessary and so direct, *branches shall be established in any state, although it had dissented.*

In Monticello, Ga., it has been resolved by a public meeting not to receive any bank notes, after September 1, except at their depreciated value, or market price in specie. This course, together with other previous and extensive operations in the south and west, will help greatly to bring dishonest banks to justice, and to show them (however contrary to all previous experience) that "honesty will be the best policy" for banks as well as for individuals. Large note-holders are having their bank notes protested for non-payment, when they thereafter carry 12 per ct. interest in North Carolina, Louisiana, and some other southern states. Such creditors have in other cases attached the funds of non-paying banks in other banks, or wherever found. The Charleston Mercury says that these latter remedies are so working that every bank in the south-west must resume payment or stop all operations.

The banks of Virginia, by law, are to resume specie payments next January. But their authorities seem to have no thought of doing so, and have been making no more recent preparation for resumption, than previously, since the beginning of the suspension in 1837. They must count confidently that their present exemption by law from the obligations of faith and honesty is again to be renewed; and will be renewed, session after session. Banks that have not prepared to pay specie in 5 years, never will prepare. There will be offered the same and as strong reasons to the next legislature, to extend indulgence to their continued bad faith, (*for the benefit of the people, of course,*) as at every previous session; and there ever will be the same and as strong reasons. The plain inference, from the whole procedure, and course of false assertion and argument, is, that the banks and the thorough paper money men go for *the suspension of specie payments as a permanent and general policy.* The promises made and expectations given to the public for resumption of payments are intended merely to deceive and to keep quiet the long suffering and grossly cheated people. A new proof of this intended policy will be seen next winter, when another year of indulgence and impunity to the non-paying and swindling system will be certainly proposed, (and as certainly carried, if the people shall still permit the banks to legislate,) and upon precisely the same grounds that have served for that purpose at every session since May 1837.

"There has been some excitement in Mobile in consequence of recent bank frauds in that state. The mal-practices of the State Bank and branches, which we have before noticed, have been a principal cause, The amount of the frauds is very large. The suspended and doubtful debt of the branch in Mobile will reach upwards of six millions of dollars."—*Money Article of N. Y. Herald.*

July 30.—The bank bill has passed the senate, by a vote of 26 to 23. Both the senators of Virginia voted against the passage.

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